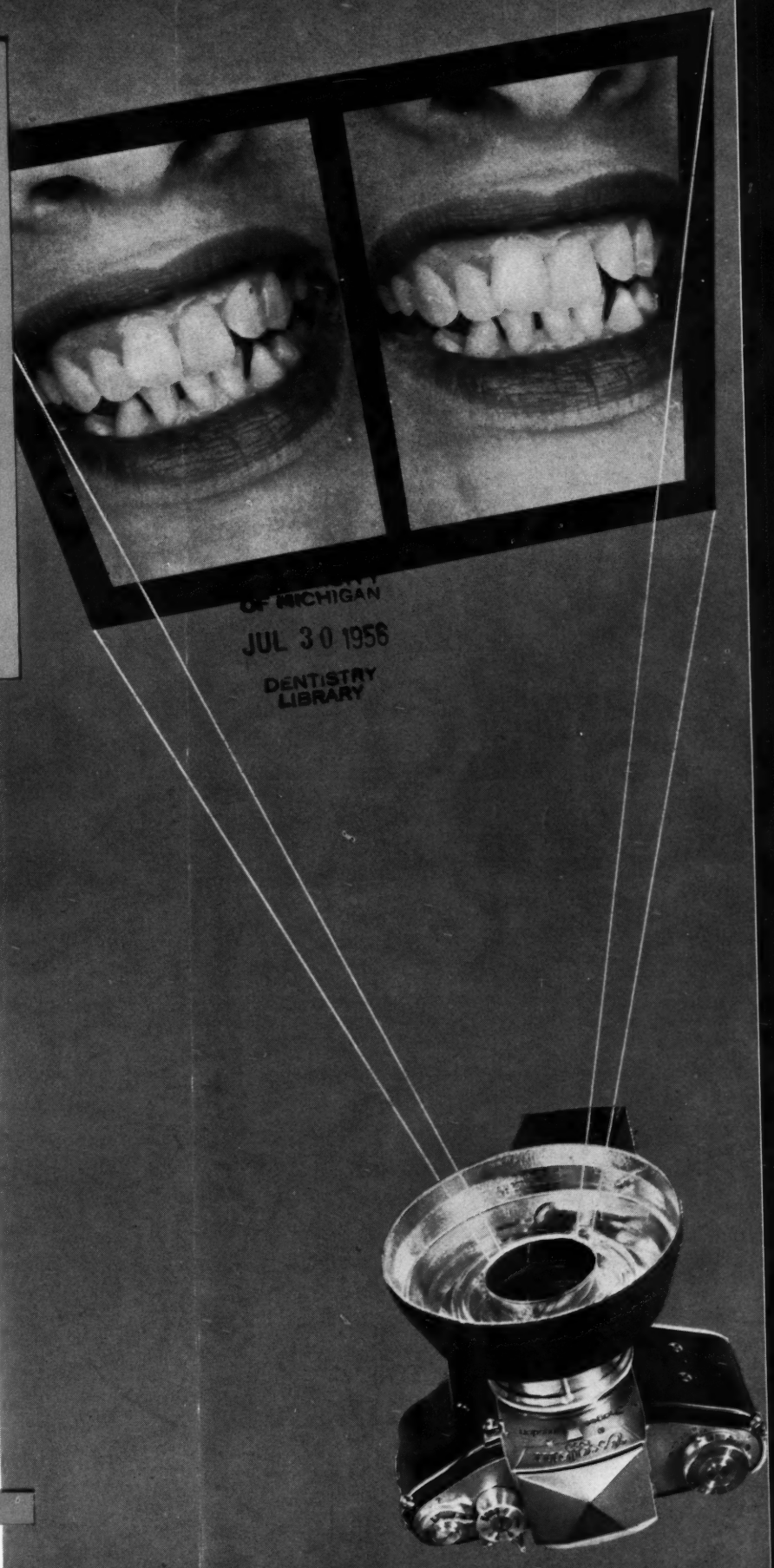
Dental Digest



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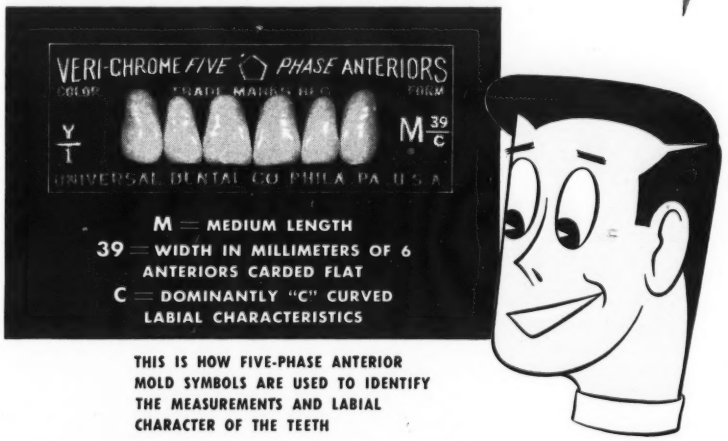
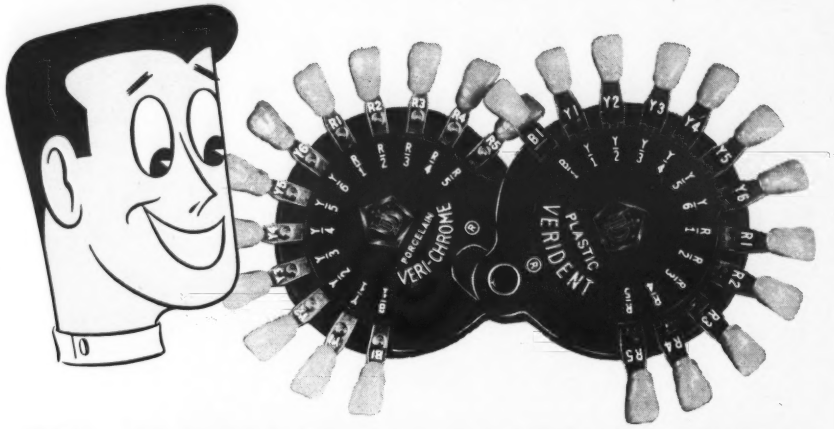


THIS IS HOW FIVE-PHASE ANTERIOR MOLD SYMBOLS ARE USED TO IDENTIFY THE MEASUREMENTS AND LABIAL CHARACTER OF THE TEETH

WIDTH OF 6 CARDED FLAT	36 MM	39 MM	40 MM	42 MM	43 MM	45 MM	46 MM	48 MM	51 MM
LONG	L36/C	L39/C L39/F		L42/C L42/F		L45/C L45/F		L48/C L48/F	L51/C
MEDIUM	M36/C	M39/C M39/F	M40/C M40/F	M42/C M42/F	M43/C M43/F	M45/C M45/F	M46/C M46/F	M48/C M48/F	M51/C
SHORT		S39/C S39/F	S40/C S40/F	S42/C S42/F	S43/C S43/F	S45/C S45/F	S46/C S46/F	S48/C S48/F	
WIDTH OF 6 SET-UP	40.0 MM	44.0 MM	44.5 MM	47.0 MM	48.0 MM	50.0 MM	51.0 MM	54.0 MM	59.0 MM

A SCHEMATIC DRAWING OF THE FIVE-PHASE ANTERIOR CO-ORDINATE SIZE MOLD SYSTEM



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Vol. 62, No. 7

Dental Digest

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JULY 1956

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About Our CONTRIBUTORS

MILTON SILVER, A.B. (Marshall College, 1947), D.D.S. (University of Pittsburgh, School of Dentistry, 1952) specializes in oral rehabilitation in his practice and has published several articles on phases of this subject. With his co-author GEORGE KLEIN, who has taught dental technology, conducted research in platinum porcelain techniques, and published a number of technical articles, Doctor Silver presents PRECISION ATTACHMENTS IN CONJUNCTION WITH CAST PLATINUM PORCELAIN RESTORATIONS.

WARREN W. COWAN, B.A. (Wayne University, 1948), D.D.S. (University of Michigan, College of Dentistry, 1951) is a general practitioner who publishes for the first time in the current issue. Doctor Cowan's article is PARALLELING THE MALPOSED ABUTMENT.

E. T. PRENDERGAST, D.D.S. (Northwestern University, Dental School, 1945) makes his first appearance in DIGEST with the publication of STEREOPHOTOGRAPHY IN DENTAL PRACTICE.

BERNARD J. GARN, B.S. (College of the City of New York, 1940), D.D.S. (New York University, College of Dentistry, 1943) a general practitioner who has published a number of articles on various phases of dentistry presents the second installment of his two-part article, ORAL RECONSTRUCTION FOR THE LOW INCOME PATIENT.

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PRECISION ATTACHMENTS

in Conjunction with

Cast Platinum-Porcelain Restorations

MILTON SILVER, A.B., D.D.S., and GEORGE KLEIN, New York

DIGEST

This article presents a modified application of an old principle in a new medium. The use of internal frictional attachments for removable partial dentures is well known to modern prosthodontists. This technique, which heretofore involved gold and/or gold and plastic retainers, is considered by many operators to be the most desirable. Dissatisfaction with the behavior of the plastics in the full veneer crown, however, has led to wider application of the cast platinum-porcelain restoration.

Disadvantages of Plastic-faced Gold Veneer Crown

The following serious deficiencies are inherent in the plastic-faced gold veneer crown:

1. Color stability is lacking.
2. Dimensional changes are not withstood well.
3. Display of gold, occlusal, lingual, and incisal surfaces are unsightly.

Advantages of Platinum-Porcelain Combination

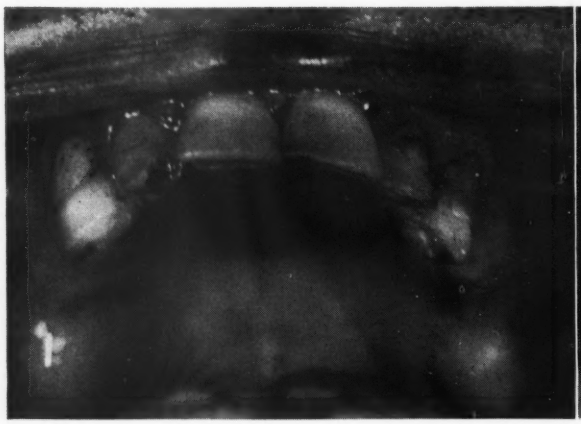
1. Maximum esthetics and sufficient strength to withstand masticating forces are afforded by the cast platinum-porcelain combination.
2. The beauty and naturalness of glazed porcelain receives patient approval as no other available medium.
3. The qualities that prompted the use of the medium in extensive fixed partial denture restorations, prompts its use in conjunction with removable partial dentures.
4. Internal attachment partial dentures combined with cast platinum-porcelain crowns housing the females, provide a physiologic prosthesis.
5. As nearly as possible, lateral torque is avoided, abutment teeth protected, and function and esthetics restored.

Preparations

Full coverage for abutments is the technique of choice. Intracoronal restorations are not practical with this technique.

Full Coverage—The following advantages are provided by full coverage:

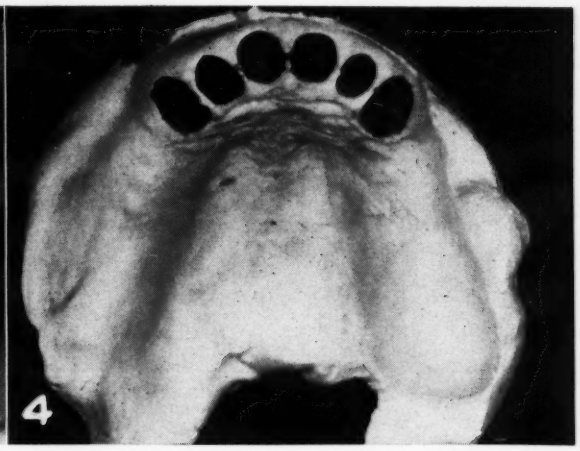
1. Greater retention
2. Prevention of recurrent caries
3. The ability to realine and recontour abutment teeth to nor-



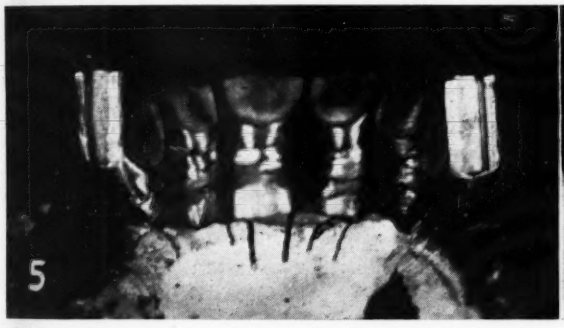
1. *Preoperative view of upper teeth and arch.*

2. *Preparations.*

3. *Platinum-alloy copings in position. Soldering points already incorporated into the metal.*



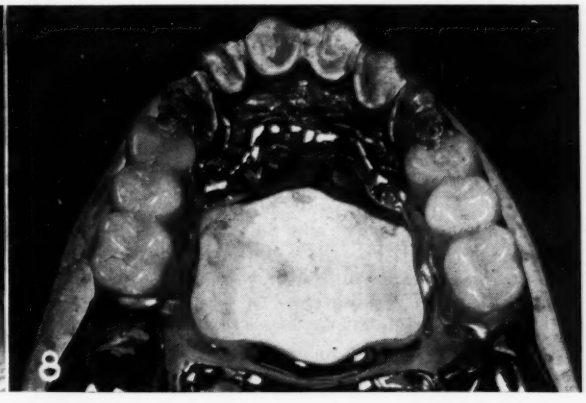
4. *Plaster impression with the copings for the master model.*



5. *Anterior metal span on model showing the recesses for the female attachments.*

6. *Anterior metal span showing females soldered into the recesses.*

7. *Precision attachments in conjunction with cast platinum-porcelain restorations for a lower case.*



8. *Maxillary case showing strong palatal bars and the relationship of the attachments to the cast copings.*

mal anatomy and proper occlusion.

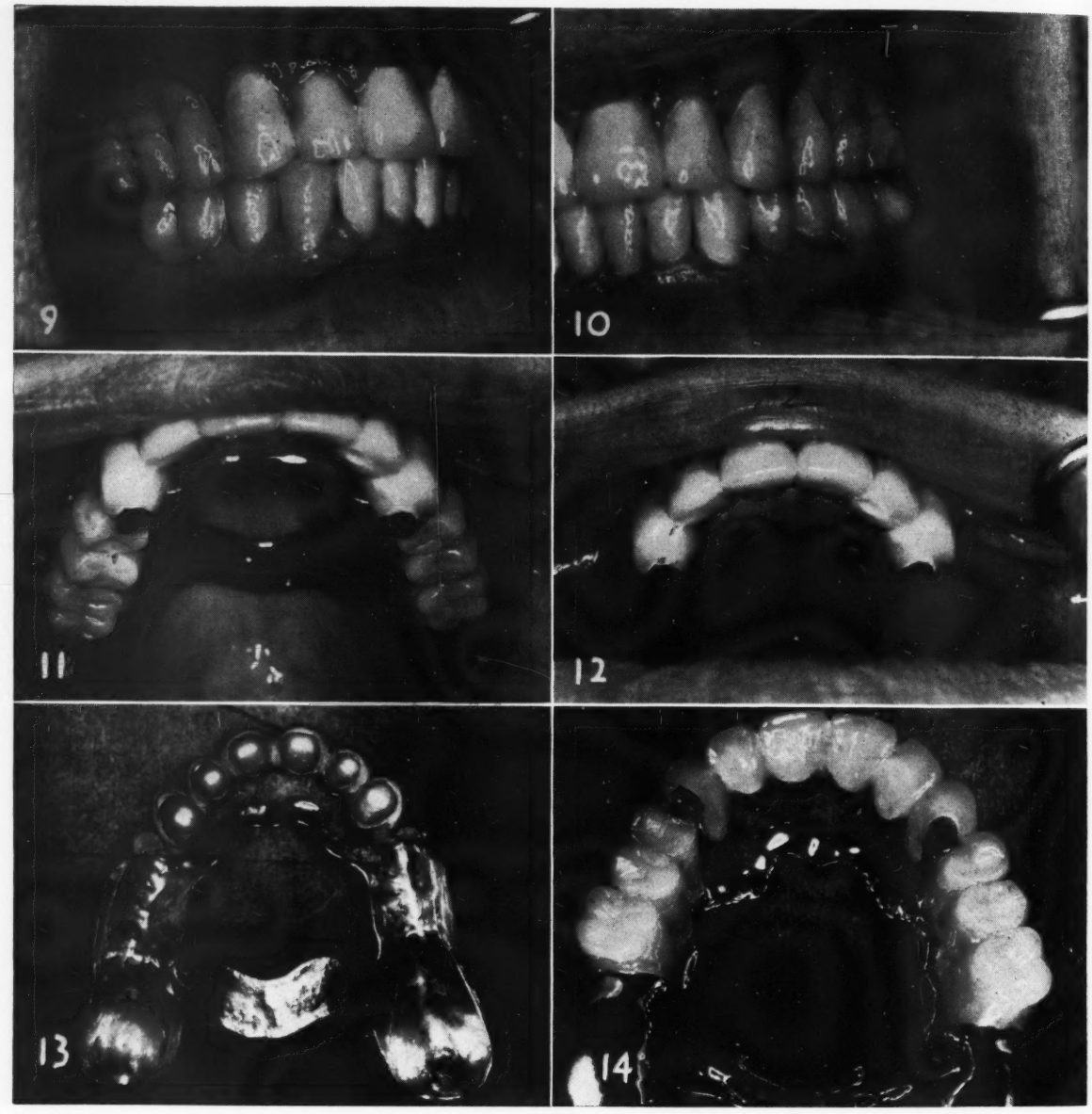
Similarity to Conventional Preparations—Preparations for the cast platinum-porcelain crowns are similar to conventional jacket preparations:

1. Posteriors are relieved of approximately 1½ millimeters circumferentially and 2½ millimeters occlusally of tooth structure.

2. Buccal shoulders are made, connecting on the lingual and proximal to definite finishing lines. The preparation ends subgingivally.

3. The buccal shoulder is beveled to allow the casting to go to the full length of the preparation.

4. Anterior teeth are prepared as standard porcelain jackets except that



9. ***Finished case showing right side.***
10. ***View of the left side of the finished case.***
11. ***Attachment case in the mouth with the anterior platinum-porcelain restorations.***
12. ***Platinum-porcelain span alone in the mouth showing female attachments in position.***
13. ***Tissue view of the partial denture and interior of the cast platinum-porcelain restorations.***
14. ***Completed precision attachment partial denture with the platinum-porcelain abutments and restorations.***

here the proximal and lingual shoulders are not needed.

5. The labial shoulder connects to finishing lines on the proximals and lingual.

6. The shoulder is beveled. No shoulders are necessary on proximal lingual surfaces because the metal coping is designed and cast with the shoulder incorporated into it. The metal, therefore, supports the porcelain, not the natural tooth.

7. The labial and buccal shoulders allow a greater bulk of porcelain, assuring color fidelity in these critical areas.

8. Slender lower anterior teeth do not require any shoulders.

9. If possible a slight recess should be made proximally to allow the female to be within the contours of the original crown width (Figs. 1, and 2).

Cast Copings of Platinum Alloy—The impressions of the prepared teeth and subsequent chair procedures do not differ essentially from standard techniques. Using this full coverage method, cast copings of a platinum alloy are provided with the means to

receive females within the natural circumference of the abutment tooth. These copings will act as transfer copings for the final model; in addition these same copings will have the porcelain baked to them (Figs. 3, and 4).

Laboratory Technique

This technique is basically the same as that used with conventional gold attachments. There are, however, important differences in the structure and the nature of the attachments as well as in their uses for the platinum-porcelain technique: the female is made of high fusing iridio-platinum that can be safely soldered to the cast metal structure and whose fusing point is safely within the range of the melting point of the cast metal structure and the fusing point of the porcelain that will subsequently be baked to the structure around the attachments.

Preparing Recesses

Preparing boxes in wax or in the cast metal to receive the females should be done to produce the following results:

1. They must conform to the predetermined path of insertion.
2. Boxes are parallel to each other.
3. Boxes must be large enough to accommodate the attachments intended for them.

In general, boxes should be larger for platinum soldering, as platinum does not flow as readily as gold solders. Another difference in technique is to be noted when positioning or paralleling females: be sure that the contact plates of females are outside of abutment boxes before waxing them in place (Figs. 5, and 6).

Investing

Use only a platinum-soldering investment; other types will break down at the high temperatures required for platinum soldering and this may emit gases which will be absorbed by the metal structure and which in turn may affect the final result in porcelain. Otherwise investing is done in the usual manner with carbon rods. Before soldering, wax is completely eliminated and the investment dryed out at approximately 500° Fahrenheit for 15 minutes, preferably in an electric furnace.

Soldering

The cast metal structure used in the illustrations and described in this technique, has a melting range of about 2700° Fahrenheit. A platinum solder that melts at approximately 2500° Fahrenheit gives the correct range. The fusing points of the porcelain are about 2100° Fahrenheit. Torch soldering with oxyacetylene or a hydrogen-oxygen gas can be used. A number 2 Purox torch tip is recommended. Platinum solder, unlike gold solder cannot be "drawn" or "pulled" through the joint, it must be "pushed" through with the flame. The flame must be a monoxidizing, noncarbonizing reducing flame without "whiskers." Unlike gold soldering, no flux is used with platinum solder.

Intermittent Pressure During Function—To assure physiologic massage and stimulation to the underlying mucosa, the males should be raised .002 of an inch in their recesses before being attached to the uprights. This will allow intermittent pressure on the ridge areas during function.

Final Steps—Duplication of the model for the casting of the skeleton in gold or chrome-cobalt alloy, and attaching males to it, is the same as when the abutments are of the conventional type. The framework should, of course, be rigid: (1) Full coverage of the saddle areas, (2) broad palatal bars in maxillary cases, and (3) rigid cast lingual bars in lower cases (Figs. 7, and 8) must be provided.

Aid in Resisting Lateral Forces—The metal casting affords the patient maximum strength with less bulk, excellent thermal conductivity, and superior tissue compatibility and adaptation. Buccal and labial flanges are made in acrylic. They aid in resisting lateral forces (Figs. 9, 10, 11, 12, 13, and 14).

Summary

The important advantages of internal attachments in conjunction with cast platinum-porcelain retainers have been presented. This type of restoration offers distinct advantages, the most obvious being durability and esthetics. Differences in technique from standard procedures have been noted. The materials and laboratory procedures have been described.

50 *East* 52*nd Street*

Acrylic Seal

JACOB SCHAFFER, D.D.S., Newark, New Jersey

Procedure

A successful method of protecting ears, either with perforated drums or with healed postoperative cavities, from the entry of water in swimming is made in the following way:

1. A cast of the outer auricle and external portion of the canal is made in the manner of a flexible plastic covering, using the technique followed in making dentures.
2. An impression of the entire ear is taken with a colloid material. This material, being plastic, will take an accurate impression of all the undercuts in the auricle as well as the outer portion of the external auditory canal.
3. A model is poured and a semisoft acrylic cast is formed. When finished, this will lock into place and be a self-retentive complete seal.

This method has been used satisfactorily by a number of postoperative cases.

Adapted from *Archives of Otolaryngology*, **63**:96 (January) 1956.

Paralleling the MALPOSED ABUTMENT

WARREN W. COWAN, D.D.S., Detroit

DIGEST

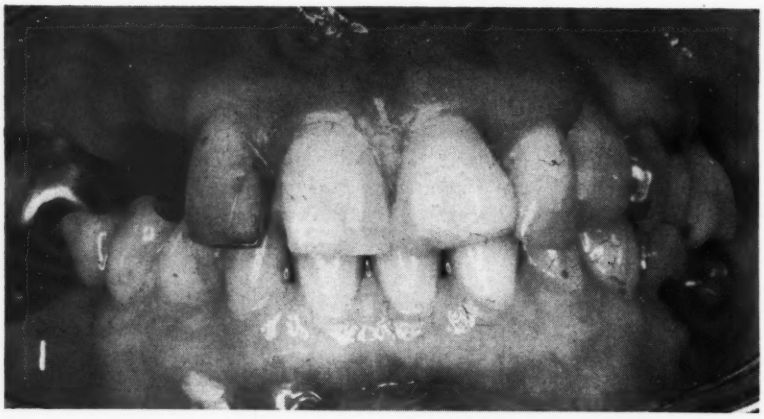
This article presents a method of building a bridge in one piece, employing all the abutment teeth present. Each step in the technique is illustrated.

Approved Technique

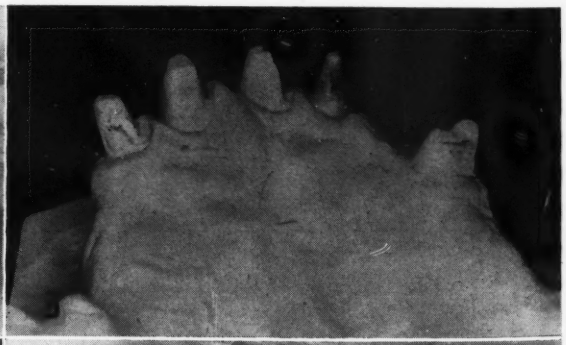
The theory and practice of splinting teeth together is an accepted technique for strengthening abutment teeth.[1,2] In many cases the addition of another abutment may mean success or failure in fixed and removable bridgework. Often cases present in which teeth are so severely malposed that the exposure of the pulp is inevitable if parallelism of this preparation with the other prepared teeth is attempted.

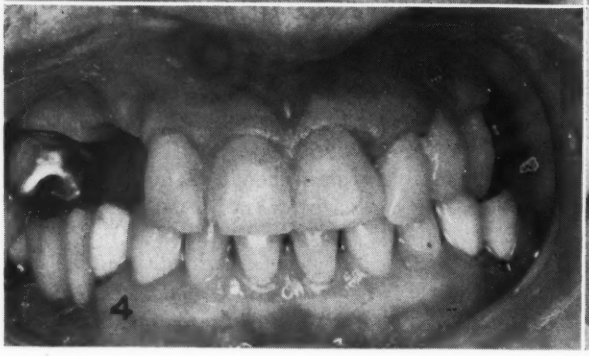
Solution for Alinement—The problem of alining the malposed tooth has had several solutions: endodontia, precision attachments or rests, split joints which have subsequently been foiled or made into one piece by means of a tiny screw.

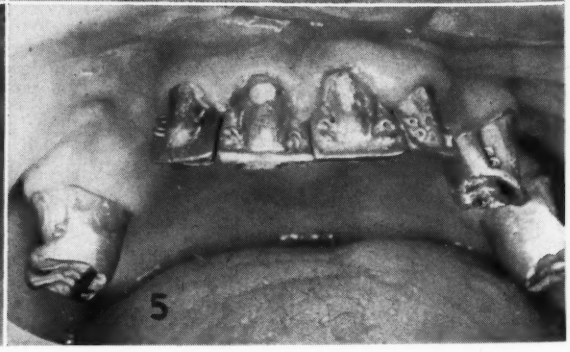
Existing Abutments Provide Support—In the case illustrated the loss of even one abutment would weaken the case considerably. On the other hand, a precision attachment, or some other type of split joint would not provide the bridge with the amount of support which the seven existing abutments are capable of giving.



[1]Schweitzer, J. M.: Oral Rehabilitation, St. Louis, C. V. Mosby Company, 1951, p. 957.
[2]Miller, S. C.: Textbook of Periodontia, Philadelphia and Toronto, The Blakiston Company, 1948, p. 405.







Procedure Illustrated

Figure 1—When first seen the patient in the case had worn an upper clasp partial denture for fifteen years.

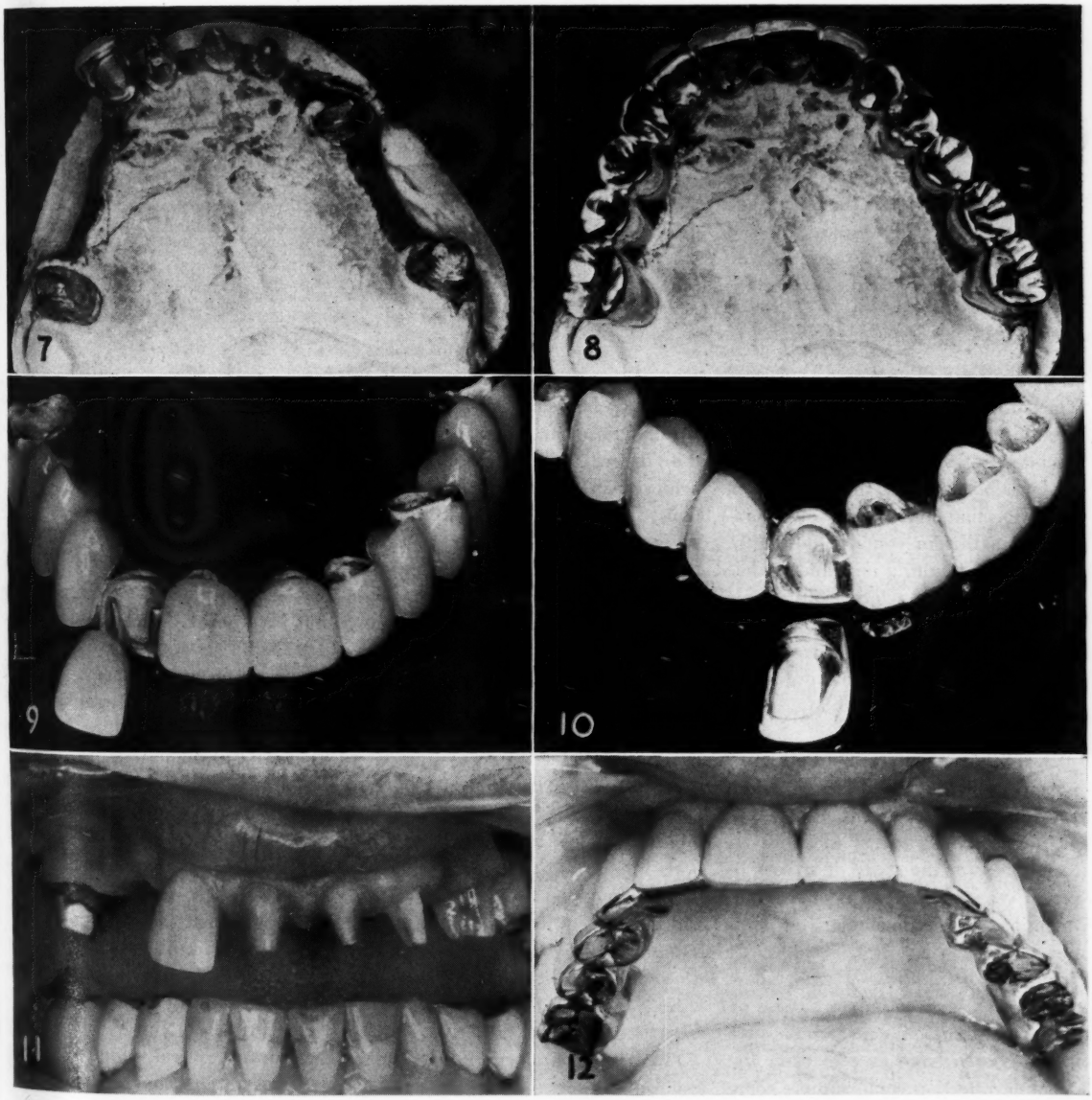
Figure 2—The preparations of all the abutment teeth are shown.

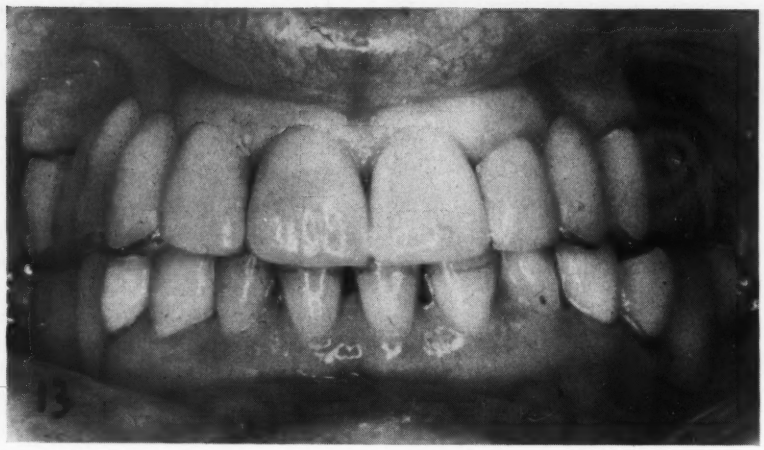
Figure 3—The case is shown mounted on the surveyor. The abutments are all parallel with the exception of the right lateral.

Figure 4—Temporary plastic jackets are made by filling alginate impressions with self-polymerizing acrylic. The patient wore these crowns while awaiting final restorations.

Figure 5—The gold crowns are tried in place and ready for the plaster impression. Gold rim seals all preparations at cervical.

Figure 6—The plaster impression is shown and the poured model with





dies in place. The impression had to be broken in two pieces because nonparallelism of the lateral would not permit one-piece withdrawal.

Figure 7—The plastic veneer crown is in place on the working model. Note three-quarter crown preparation in the lingual of the lateral. This preparation is parallel with the other abutments.

Figure 8—The completed bridge is shown on the model, demonstrating how the three-quarter crown fits over the plastic veneer crown on the lateral.

Figure 9—The completed bridge from the labial. The three-quarter crown is soldered in sequence with plastic veneer crowns and pontics. This crown is made strong to maintain rigidity of the bridge.

Figure 10—Another view of Figure 9.

Figure 11—Cementation of the lateral plastic veneer crown is a separate step.

Figure 12—The remaining part of the splint is cemented in place.

Figure 13—The completed case.

Summary

By means of the separate individual crown it is possible to parallel a malposed abutment by placing a preparation in the crown parallel to the other abutment teeth. This method ensures maximum support from existing abutment teeth and maintains the vitality of the pulp.

Conclusion

The results of the case illustrated suggest that the problem of nonparallel abutments can be solved without breaking the stress or resorting to endodontic measures.

1445 *National Bank Building*

Herpes Simplex

Types of Infection

One of the commonest of human infections, herpes simplex is usually associated with the recurrent cold sore or fever blister. After the recognition, however, that many cases of ulcerative stomatitis in young children are herpetic in origin, a new interest has been taken in the relationship of this virus to human disease. Two distinct types of infection are noted:

1. A primary infection occurring in persons with no antibody, sometimes resulting in a systemic illness.

2. The recurrent form in which a purely local lesion develops in those previously infected.

Diagnosis—As a result of improved techniques for the study of viruses in recent years the diagnosis of herpetic infection has become relatively simple.

Disease of Children—Primary herpes simplex is essentially a disease of young children, and considerable variation is seen from case to case. Inapparent infection is much more common than clinical disease, which is not altogether surprising in view of the ubiquitous nature of the virus and the degree of parasitism it has achieved in man. In one series less than 1 per cent of children under observation had symptoms; similar findings have been reported elsewhere.

Conditions Favorable to Incidence—Outbreaks of stomatitis in institutions are well recognized and in one instance the attack rate was 100 per cent, with clinical stomatitis in more than half the patients. Similarly, outbreaks of generalized herpes infection occur in children's skin wards and can be of serious consequence. Serologic tests show that nearly all newborn infants are protected by maternal antibody for four to six months, and that 60 per cent of children have had their primary infection by the time they are five years old.

Characteristic Symptoms

(1) The characteristic vesicular lesion of herpes simplex may develop anywhere on the skin or mucosal surface, but the most frequent sites are on the face and in and around the mouth; less commonly a vulvovaginitis is seen.

(2) Herpetic infection of superficial grazes, knife cuts, and burns may give rise to difficulty in diagnosis, not only because of the unusual sites but because of the accompanying induration.

(3) In a typical case of primary herpes simplex the constitutional reaction may be out of all proportion to the extent of the lesions.

(4) Pyrexia and enlarged regional glands are early features of the infection, and these conditions are invariably prolonged when secondary bacterial infection occurs.

(5) Eczematous children, or others with an abnormal skin, may develop a generalized infection (eczema herpeticum).

(6) As a result of hematogenous and surface spread, crops of vesicles,

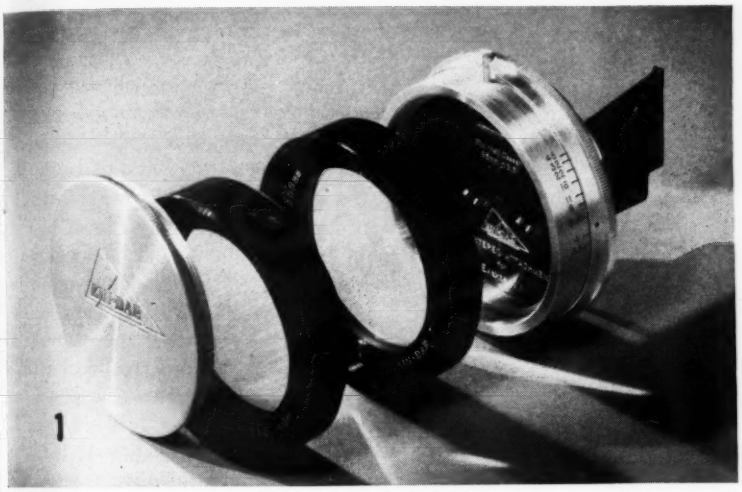
(*Continued on page* 328)

STEREOPHOTOGRAPHY

in Dental Practice

E. T. PRENDERGAST, D.D.S.

Denver, Colorado



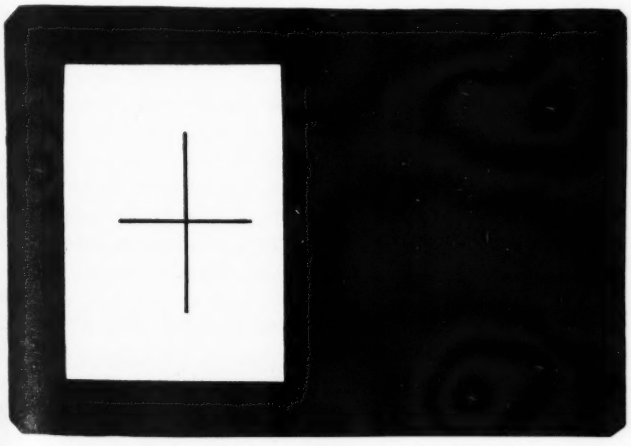
1. *Close-up attachment showing septum and two lens openings and accessory 300-millimeter lenses for taking stereo pictures at 9 inches and less.*

Working Distances and Sizes of Field at f/3.5

Lenses	Approximate Working Distance at f/3.5	Approximate Field Size
No supplementary Lens	9"	3¾" x 5"
One 12" supplementary	5½"	2⅛" x 2¾"
Two 12" supplementaries	4"	1½" x 2"
Three 12" supplementaries	3⅜"	1¼" x 1⅝"

Note: Working distance above is measured from the front edge of the attachment.

2. *Chart of working distances from 9 inches to 3⅜ inches.*



3. *Celluloid mask used in precise framing of object through camera view finder.*

DIGEST

Three-dimensional dental photography has in many instances notable advantages over planar or flat photography. Many dentists owning stereocameras have attempted to use them in their practice because they realized the possibilities of the stereo system. Close-up dental pictures, however, were unsuccessful with the average stereocamera.

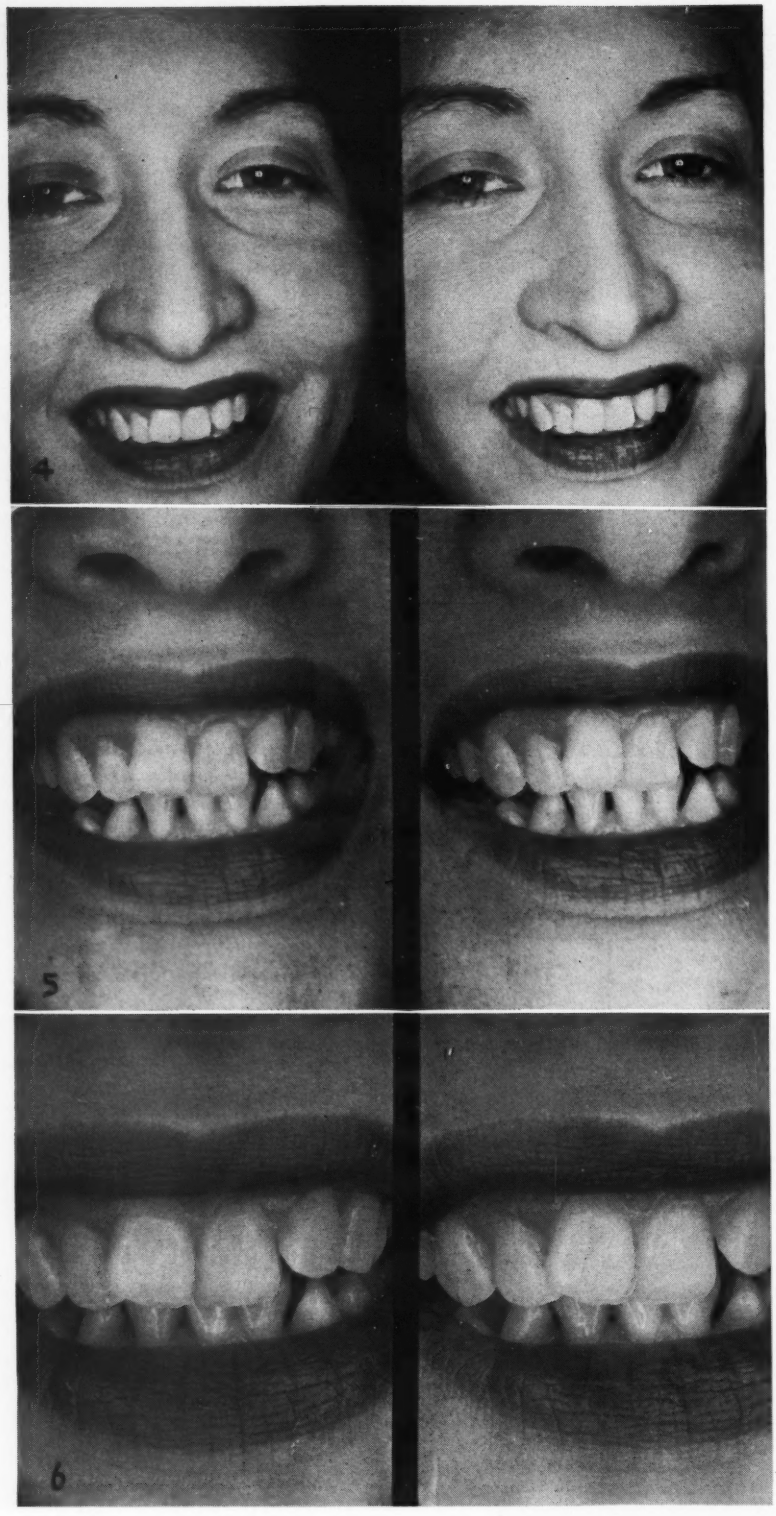
The author of this article has for several years experimented with portra lenses, slide bars, and stereo angle lenses with only partly satisfactory results. With the technique described herein, however, which utilizes a popular 35-millimeter single lens reflex camera, any dentist with a little knowledge of photography can obtain three-dimensional pictures in his own office with a minimum of effort.

Equipment Required

A new type Hypo-Stereo attachment (Fig. 1) is designed for taking stereo pictures at a distance of 9 inches and closer.

Basic Unit—This has two coated 35-millimeter Steinheil Cassar f 3.5 lenses and has a bayonet lens mount. The lenses are centered with an interocular separation of .625 inches and are preset to be in focus on objects about nine inches away; f stops are f 3.5 to f 45.

Supplementary Lenses Available—The addition of one 300-millimeter supplementary lens allows close-ups at 5½ inches. The lenses have a diameter of 42 millimeters and are thread mounted to each other and to the basic unit. The working distances and sizes of field are shown in Figure 2.



4, 5, and **6.** ***Stereo pictures taken on panchromatic film showing size of field using no supplementary lens, one supplementary lens, and two supplementary lenses.***

Aid in Centering and Framing—A thin celluloid mask is supplied which is designed to prevent the operator from seeing a double image and to aid him in precise centering and framing of one of the pictures of the stereo pair (Fig. 3). Either the waist-level or penta-prism finder is removed and the mask easily inserted before replacement.

Procedure

(1) The basic attachment can be used alone or with various supplementary lenses depending upon the working distance necessary to cover the subject field. (2) Pictures taken at 9, 5½, and 4 inches are shown in Figures 4, 5, and 6. (3) The desired f stop is preset and as long as the reflex mirror is down for viewing the apertures remain fully open until the shutter is released. (4) The camera is moved slightly closer or farther away from the object until the image is sharp. (5) When the picture is taken the shutter release button releases the reflex mirror; this swings up and permits the blade trip lever of the attachment to unlatch the diaphragm blades; these in turn close down to the preset f stop. (6) The mirror reaching the end of its swing trips the shutter, making the whole operation automatic.

Change

To use the attachment the lens flange must have an outside lock (Fig. 7). If the camera used is several years old it will not have the proper lens flange and it will be necessary to obtain a new one from the camera manufacturer. Lenses used with the old flange will fit the new flange equally well.

Lighting

As it is necessary to have the light where it will do the most good an electronic flash ring light is recommended (Figs. 8 and 9). Most electronic flash units give a light equivalent to daylight, (5600.K) and therefore daylight color film is used. Without flash the existing light will seldom be great enough to permit the use of small enough stops to obtain the desired depth of field.

Film

The author prefers to use Kodachrome Daylight Color Film (ASA10). Good results have been obtained, however, by using Ektachrome Daylight Type (ASA32) and Anscochrome Daylight Type (ASA32). The last two types can be processed locally or by the dentist.

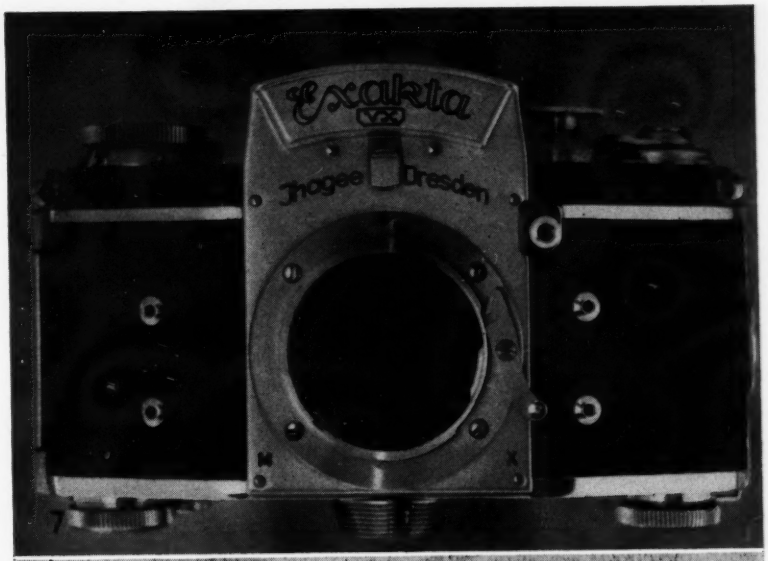
Mounting

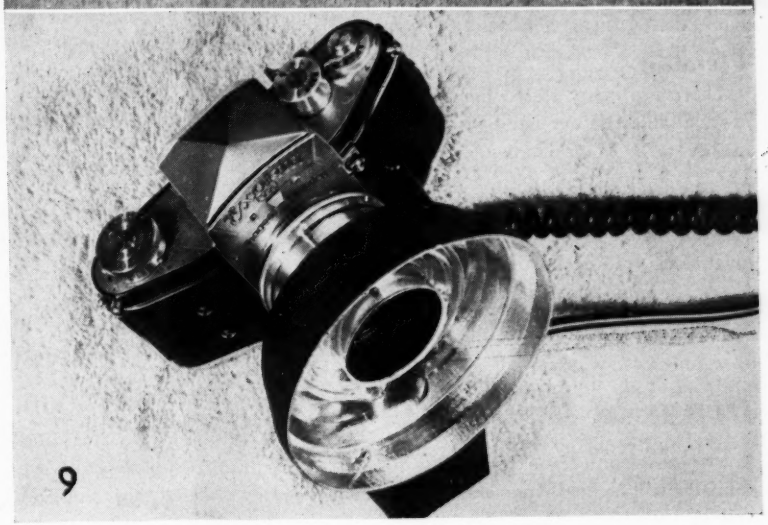
An interocular separation of 2.456 is acceptable in mounting. This measurement is in reference to the openings in the mask and denotes the distance between such openings from the left hand side of one opening to the left hand side of the other opening. The stereo "window" is properly adjusted by placement of the film in the mask, moving them closer together or farther apart.

Metal masks of correct size are now available from the EMDE company.

Matching Transparencies Produced—A 35-millimeter frame has 8 perforations and hence this attachment produces 2 matching transparencies, each 4 perforations wide. Regular stereo pictures have 5 perforations and if a regular stereo mask is to be used the outside edges of the pictures will need to be masked off. The author has found Realist Masks and stainless steel matrix ribbon .003 inch to be suitable.

Glass Used in Mounting—Mounting the mask between two pieces of glass is to be recommended, and is necessary if the slides are to be projected (Fig. 10). Despite the blower on the projector, films will buckle and even be damaged from the intense heat of the light from the condensing lens confined to a small area unless glass is used in mounting. If the slides are to be used in a hand stereo viewer, glass or plastic is advised to protect the slide from fingerprints and scratches. If the slide is to be placed in a magazine and left there for viewing, the mask can be placed in a card-

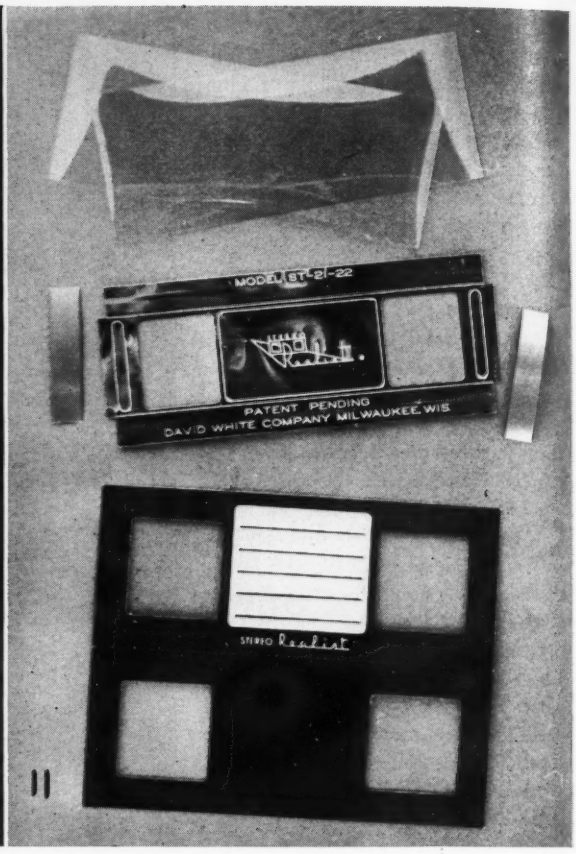




7. ***Camera with new type lens flange having both inside and outside locks.***
8. ***Electronic ring light fits around lens confining light to area being photographed.***

9. ***Assembled outfit showing camera, attachment and ring light ready for use.***

10. ***Glass mounting of transparencies. Left to right: aluminum frame for binding edges, regular size stereo aluminum mask for holding transparencies with ribbon matrix for masking outside edges and thin glass covers.***



11. ***Cardboard mounting of transparencies. Left to right: two thin sheets of plastic, aluminum mask as used in previous method, cardboard folder. Binding tape seals the edges.***

board frame and the edges bound with tape (Fig. 11).

Viewing

There are many stereo hand viewers available and one having a brightness control is recommended (Fig. 12).

There are also several stereo table viewers made. Some of these accept magazines holding 24 or more slides (Fig. 13) and eliminate the task of changing individual slides.

Projection

The advantage of projection is in showing the slide to a greater number of people. Polaroid glasses are, of course, necessary and an aluminum screen is required. The viewer should sit fairly well in front of the screen and not at a severe angle.

A wide variety of stereo projectors is offered the photographer today.

Comment

A practical method of taking and showing three-dimensional dental pictures has been presented in which ease of operation is an important feature. Various uses for stereo color pictures might well be used for records, study, clinics, teaching, and visual education. The three-dimensional picture creates a realism important in dental photography.

Figures 12-13 appear on page 307

2847 *Fairfax Street*

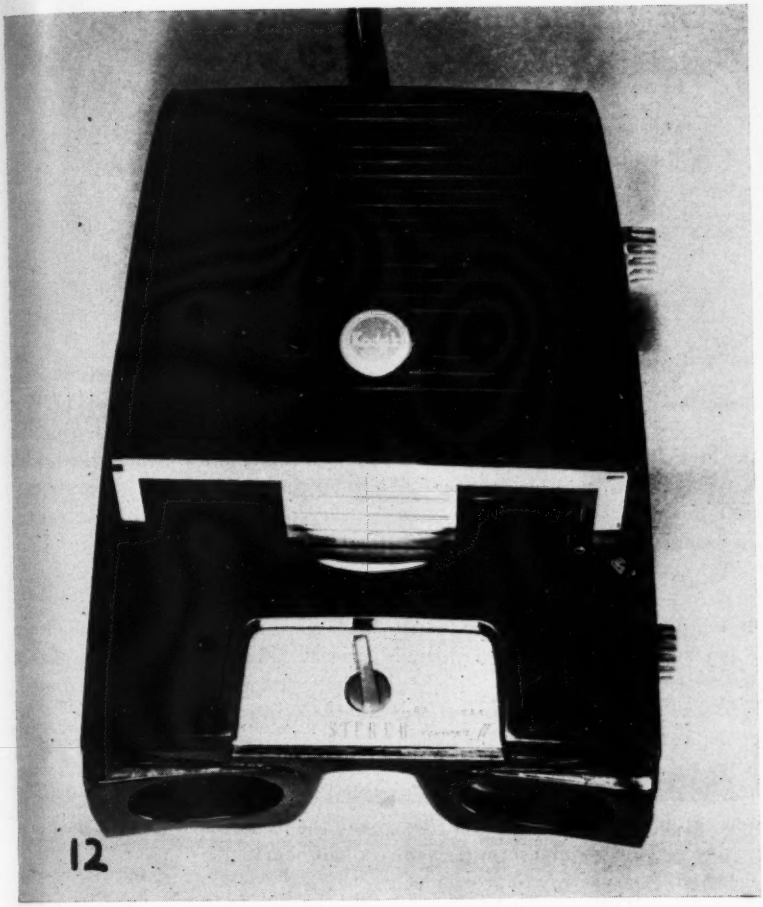
Drugs in Dentistry

A TWO-DAY conference on drugs in dentistry will be held August 30th and 31st at University, Mississippi under the auspices of the University of Mississippi, Extension Division.

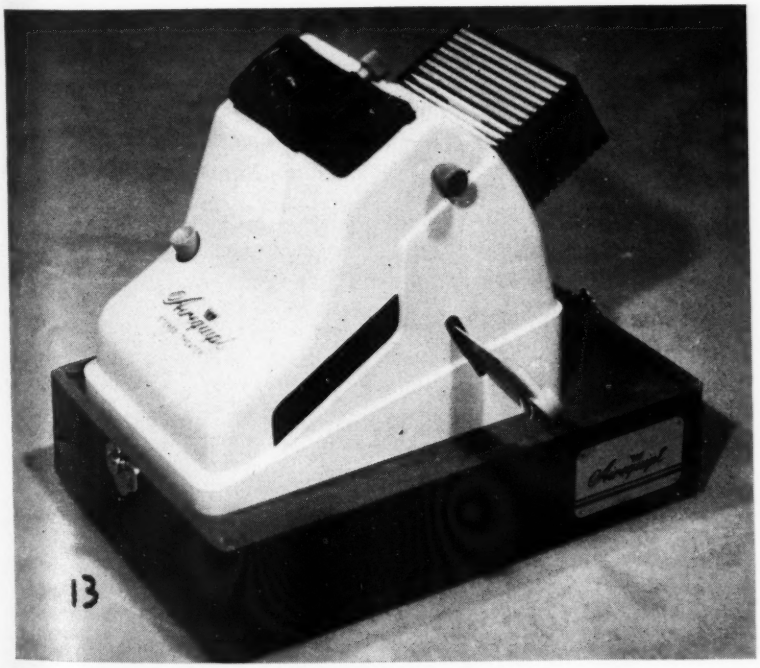
The following subjects will be discussed at the conference: nutrients, antibiotics, analgesics, sedatives, hypnotics, tranquilizers, dentifrices, anti-inflammants, prescription writing.

All ethical dentists are invited to attend the meeting. The fee is $10.

For more information write to: Conference on Drugs in Dentistry, University, Mississippi.



12. *Electric stereo hand viewer.*



13. *Table top stereo viewer with magazine holding two dozen slides.*

Freud and his Achievements

ERNEST JONES, M.D., D.Sc., F.R.C.P.

Freud and his Suffering

When Freud was 67 he was attacked by an epithelioma of the sulcus between the cheek and upper jaw. In an operation carried out in two stages half of the superior maxilla was extirpated together with the submaxillary glands. There followed more than sixteen years of intense discomfort and often great misery. He had to submit to thirty-three operations in all, with in between them repeated radium and x-ray applications of an extremely painful nature. There was also the daily discomfort of difficulties in eating and speaking, with the constant irritation of imperfectly fitting prostheses. Nevertheless he bore all this martyrdom with an exemplary nobility.

From *British Medical Journal* No. **4974**:998 (May 5) 1956.

We Can't Pay You, But—

NO DENTAL AUTHOR can ever be *paid* for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often spends money for drawings, photographs, models, or graphs. We should like to help defray some of these expenses.

Until further notice DENTAL DIGEST *will allow* $25.00 *toward the cost of the illustrations provided by the author of every article accepted.*

If you have a constructive idea, an innovation, a new result of tried and proved experiment, put it down in writing, illustrate it, and send the material to: DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

We can make suitable black-and-white cuts from Kodachrome transparencies.

We hope that you will accept this invitation!

ORAL RECONSTRUCTION

for the Low Income Patient – Part Two

BERNARD J. GARN, D.D.S., New York

DIGEST

This is the second of a two-part article which presents a step-by-step technique designed especially, because of the reduction of the time required to complete it, for the patient for whom the cost of oral rehabilitation is prohibitive. This installment continues the presentation of actual case histories in which the procedure was successfully employed.

Case Histories

The technique outlined in the following case histories offers a method of reconstructing the mouth of the low income patient in a way that includes all of the advantages of oral reconstructive treatment, temporarily, at least, while the cost is deferred until the patient can afford it or reconstructive treatment can be provided at a low fee.

Case B—The patient in this case was a sixty-year-old woman. For the past fifteen years she had been wearing a full upper denture and a partial lower denture with clasps on the lower cuspids. The cuspids were extremely mobile, the gingival tissues were inflamed, and there were several cavities (Figs. 12a, and 12b).

Treatment Planned—This patient could afford permanent restorations but the prognosis of the lower anterior teeth was so doubtful that it was not deemed advisable to undertake them at this time (Fig. 13). The following restoration was therefore constructed:

1. At the first visit a full lower alginate impression was taken with the lower partial denture in position. A wax bite and the proper shade were also obtained at this time. *Chair time* 15 *minutes.*

2. Laboratory procedure:

a. A model was poured with the partial denture in position (Fig. 14). A counter-register was also poured and articulated.

b. The teeth were prepared on the model as they would be in the mouth (Fig. 15).

c. Prefabricated acrylic jackets were ground to fit the model. The waxing of the appliance was completed with special care to provide accurate fit under the partial denture.

d. The case was processed in the usual manner (Fig. 16). *Technician's time, four hours.*

3. On the second visit the following steps were completed:

a. Seconal, grains 1½, and bilateral conduction anesthesia were administered.

b. The six lower anteriors were prepared for jacket crowns (Fig. 17).

c. The splint was seated over the preparations after being filled with quick-setting acrylic.

d. The splint was then removed and carefully trimmed, carved, and polished (Fig. 18).

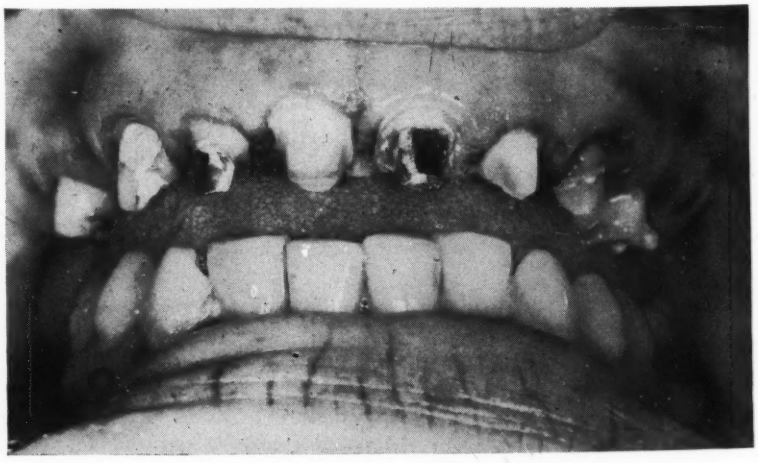
e. The case was finally cemented with an acrylic-compatible temporary cement (Figs. 19a, and 19b). *Chair time, one hour and forty-five minutes. Technician's time,* 30 *minutes.*

Total Time Required—The fee in this case can be computed from the total dentist chair time of two hours and the technician's time of four and a half hours.

Final Measures

Posttreatment Observation—One month after treatment the six lower anteriors were quite firm. The gingival tone was much improved. The patient was extremely pleased with the improved comfort and the esthetics of the denture.

Future Treatment—It was planned

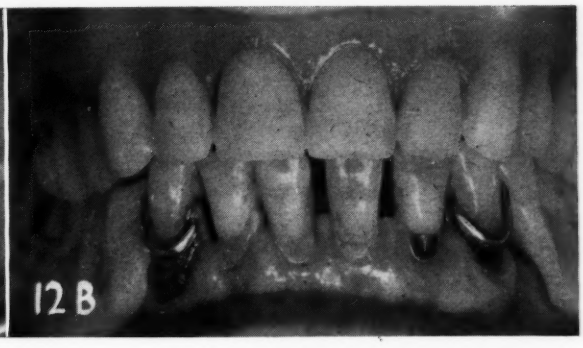


9. ***Teeth prepared.***

10. ***Appliance in mouth on first day.***

11. ***Appliance in mouth after one week.***

12A. ***Case B. The case as it was presented for treatment.***



12B. ***The same case as shown in Figure 12A with the prosthesis in place.***

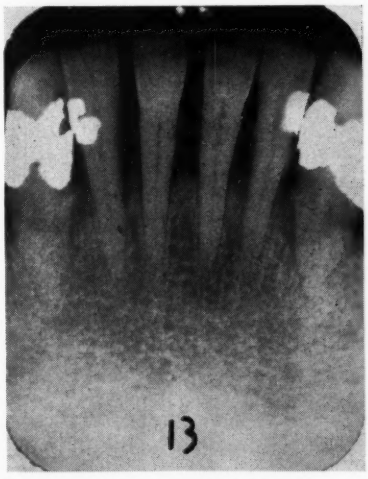
to remove the appliance every four months for cleaning, minor repairs, and recementation.

Possibility of Further Improvement—In this case it may eventually be possible to construct a more permanent type of splint. If this possibility is realized, it will be a tribute to the success of the techniques of oral reconstruction. If the condition of the lower teeth, however, does not improve to that extent, the procedure will be more than worth while if the lower anterior teeth are preserved for a period of two years or more.

Case C

In a woman in her early thirties the following oral conditions were noted:

(1) The occlusion was good, (2) the gingival tissue was healthy, (3) despite an inordinate degree of caries there had been only one permanent tooth lost, (4) the metal restorations on the posterior teeth were holding up well, and (5) the upper anterior teeth had been restored by permanent jacket crowns.



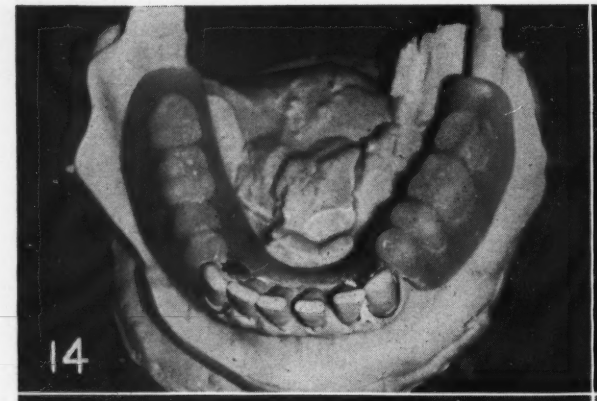
13. ***Roentgenograms of Case B.***

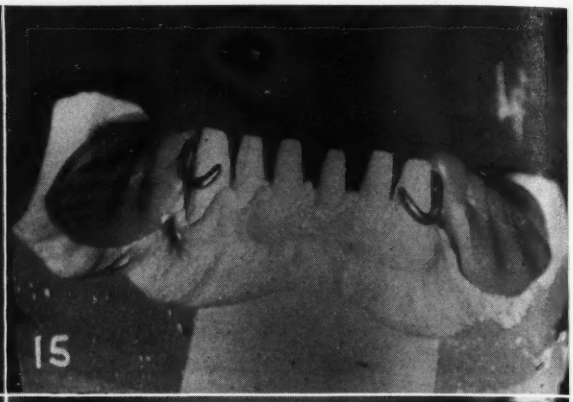
Immediate Problem—In the lower anterior teeth there existed a combination of caries, recurrent caries, washing out of silicate restorations, loose acrylic restorations, and the normal amount of attrition. In this situation no restoration except a porcelain jacket could be successfully used on at least five of these teeth (Figs. 20 and 21). In this case the patient could afford the treatment if it could be done over a long period of time or delayed for a year or two. She could not undertake permanent reconstruction treatment at this time, however, much as it might be necessary.

Procedure—The following procedure was adopted:

1. On the first visit (1) a full lower alginate impression was taken and (2) a wax bite registration and shade determination were obtained. Chair time *one and one-half hours.*

2. Laboratory procedure. This was the same as in the preceeding cases. *Technician's time, four hours.*





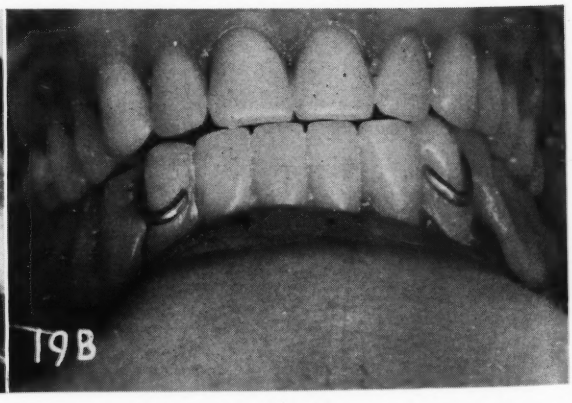
14. ***Model with partial denture in position.***
15. ***Model with teeth prepared.***
16. ***Finished splint on model.***
17. ***Teeth prepared.***

Advantages of Technique

This case provided an immediate improvement in the esthetics, a solution to the restoration problem, and a postponement of the financial problem. Assuming that the permanent restorations are constructed within two years, there will have been no added effort or cost other than two hours of technician's time over the conventional method of treatment.

Cost Decreased—In this case, be-

18. ***The appliance removed after fitting in the mouth.***



19A. ***Completed appliance in the mouth.***
19B. ***Case B. Prosthesis in place.***

cause of the economies effected in completing five jacket crowns at one sitting, the combined fee for the present temporary reconstruction and the future permanent treatment was a smaller amount than five conventionally completed jacket crowns would have been if completed singly.

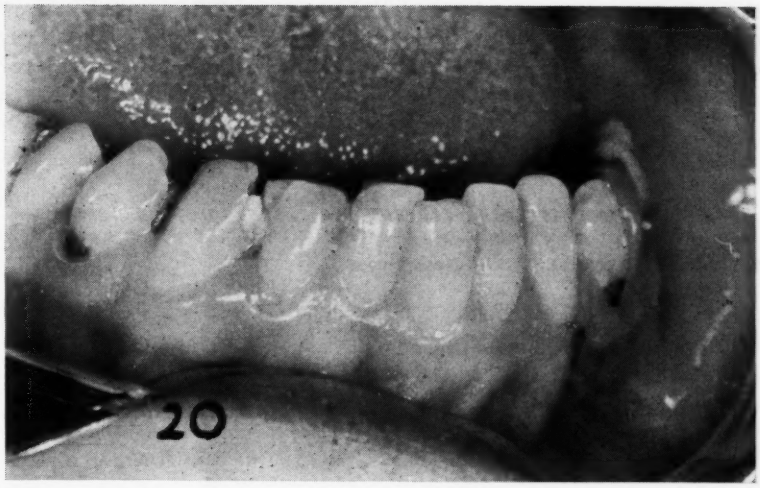
Total Time Required—The total chair time in this case was *two and one-half hours. Total technician's time was four and one-half hours.*

Unusual Features of Technique

The technique employed in the case discussed in this article includes the following novel features:

1. The teeth are prepared for the restoration on a model before they are prepared in the mouth.
2. Dense, hard, beautifully shaded manufactured acrylic jackets are used for the main part of the appliance.
3. All of the external surfaces of the appliance consist of manufactured or regularly processed acrylic. The only use of quick setting acrylic is on the interior of the appliance where it is not in contact with the fluids of the mouth.
4. The seating of the appliance with quick setting acrylic immediately after the preparation of the teeth provides a perfect fit and accurate adaptation at the gingival margin.

Procedure Adopted as Standard—While the cases described herein all involve the use of the appliance as a more or less permanent restoration this procedure has been adopted as standard even when the permanent restorations are to be made immediately.



20. *Case C. The mouth as presented for treatment.*

Variation in Technique for Permanent Restorations—The only difference in these cases is that copper band impressions are taken at the time the teeth are prepared. The saving in chair time and the excellence of the temporary restoration more than compensate for the slight additional cost of this variation.

Occlusion and Esthetics Perfected—The technique affords dentist and patient an opportunity to take time in perfecting the occlusion and esthetics of the case before it is completed.

21. *Roentgenograms in Case C.*

Comment

Future developments in dental techniques and materials may make it possible to provide the patient with the advantages of oral reconstruction at a moderate cost. For the present the technique described offers a method of reconstructing the mouth of the low income patient in a way to in-

22. *Teeth prepared.*

23. *The appliance in position.*

clude all of the advantages of oral reconstructive treatment, at least temporarily, and to defer the cost until the patient can afford it. This type of appliance may be remade every three years and be considered a better service for the patient than to condemn him to a full denture prosthesis.

57 *West 57th Street*

Temporomandibular Joint Syndrome

L. LASZLO SCHWARTZ, D.D.S., New York

Sources of Pain

Facial pain is frequently caused by spasm of the masticatory muscles and accompanied by dysfunction of the mandibular muscles. Conservative treatment eliminates the pain, but cortisone therapy, joint infiltration with sclerosing solutions, excision of the meniscus, or altering occlusion of the teeth is rarely successful.

Wide Range of Motion—The temporomandibular joints are the only system of yoked joints in the body. Neither joint can function independently of the other. Since the joints turn in virtually all directions, the mandible has a wide range of motion.

Resistant to Disease—With rheumatoid arthritis the incidence of temporomandibular joint involvement is less than 5 per cent, whereas finger joints are affected in 92 per cent of instances.

Predisposition a Factor—Frequently the temporomandibular joint syndrome is precipitated by sudden or continuous stretch of the masticatory muscles as in a yawn. Predisposition, psychologic as well as physiologic, seems to be the most important etiologic factor.

Other Factors—Emotional tensions may be manifested by clenching or gnashing the teeth. Dental malocclusion is probably only a contributing factor.

Nature of Temporomandibular Joint Pain

A unilateral, constant, dull earache or jawache sometimes spreading to the head, neck, and shoulder is characteristic of this pain. Tenderness in the antigravity muscles of the jaw, neck, shoulder, and sternomastoid is common.

Limitation of Motion—Dysfunction as a result of pain generally consists of limitation of mandibular movement. Before the limitation phase and after pain and spasm are relieved, however, functional incoordination of mandibular muscles may occur.

Symptoms of Incoordination—Clicking and recurrent subluxation are symptoms of incoordination but are less incapacitating than limitation of motion.

Treatment

Initial treatment consists of use of ethyl chloride spray or procaine infiltration of muscles to relieve pain. When painless movement is possible, the patient exercises the mandible while lying on his back. Exercises are selected according to the type of dysfunction:

1. For dysfunction from limitation, the patient moves the mandible in gentle rhythmic movements, gradually increasing the range. Acute spasm of the masticatory muscle is often released by a single treatment.

2. In cases where symptoms are of long duration, the masticatory muscle must be stretched. The patient's head is held firmly with one hand and the mandible with the other. The patient opens and closes the jaw in hinge-like movements ten times and then opens the jaw as wide as possible three times against the resistance of hand pressure. The exercise is repeated at least three times to gain relief.

3. If treatment is unsuccessful, contracture of the muscles with fibrosis formation has likely occurred.

4. When dysfunction is caused by incoordination of the joint, treatment is more complicated and less successful. Exercises must be done to build muscle power as well as to relieve spasm.

5. Altering occlusion of the teeth is a valuable adjunct in treatment of temporomandibular joint syndromes. Dental therapy, however, cannot be relied upon completely and should be delayed until improvement is evident.

Differential Diagnosis

Roentgen ray examination excludes organic diseases of the temporomandibular joint, including condylar fractures, neoplasms, and calcific deposits due to collagen diseases. Disorders of the parotid gland, ear, and paranasal sinuses and dental, oral, and neurologic diseases must also be considered.

Effects of Muscle Spasm—Roentgen ray study is also useful for showing the effects of muscle spasm on the condylar movements.

Individual Variations—No attempt should be made to establish a geometric norm by roentgenograms because wide individual variations exist.

Symptoms of Functional Incoordination—Subluxation and dislocation are usually symptoms of functional incoordination and cannot be diagnosed by roentgen ray study.

Adapted from *Modern Medicine* **24**:91 (May 15) 1956.

The EDITOR'S Page

ANYTHING that concerns the anatomy and the physiology of the temporomandibular joint or contiguous tissues should be of diagnostic concern to the dentist. Pain in the temporal area is frequently associated with overclosure of the mandible. Another syndrome has recently been described that involves profuse sweating over the temporal area that is associated with eating.[1] This condition, called the auriculotemporal syndrome or gustatory sweating, is an aftermath of inflammation of the parotid gland. In the cases reported the parotitis followed abdominal surgery.

It has been theorized that in the process of healing following parotitis, parasympathetic salivary nerve fibres were misdirected into the sweat glands in the vicinity of the parotid gland. During the salivary stimulation in eating, the sweat glands received secretory impulses in the area where the dual nerve supply had developed.

Normal sweat glands have only an innervation from the sympathetic side of the autonomic nervous system whereas the salivary glands have both sympathetic and parasympathetic innervation. The kind of "short-circuiting" described allowed the sweat glands that were involved to respond to the salivary stimulus.

The basic anatomy of the area involved is described by the authors as follows:

"The auriculotemporal nerve arises from the mandibular branch of the trigeminus immediately below the foramen ovale. It then runs laterally and posteriorly to the medial side of the neck of the mandible, where, closely in contact with the capsule of the parotid gland, it turns upward between the mandibular condyle and the external ear. It supplies sensation to the skin of the temple and also carries sympathetic and parasympathetic fibers. Some twigs of the auriculotemporal nerve communicate with filaments of the facial and of the greater auricular nerve. Its parasympathetic component originates in the inferior salivatory nucleus and travels by way of the glossopharyngeal nerve to Jacobson's nerve, to the tympanic plexus, to the small superficial petrosal nerve, to the otic ganglion. Postganglionic fibers from the otic ganglion pass to the nearby auriculotemporal branch of the mandibular nerve and travel in it to the parotid gland to supply secretory and vasodilator innervation.

"The sympathetic component reaches the auriculotemporal nerve at a postganglionic branch from the superior cervical sympathetic ganglion and carries vasoconstrictor fibers to the parotid gland and vasoconstrictor and sweat fibers to an area of skin corresponding to the sensory distribution of the auriculotemporal nerve. Thus, this sensory nerve is unique in that in the portion of its course adjacent to the parotid gland it contains postganglionic parasympathetic and postganglionic sympathetic fibers."

These facts have been established for the auriculotemporal syndrome:

"1. There is usually impairment of sensation in the distribution of the auriculotemporal nerve, indicating that it has been partially or completely interrupted. 2. The sweating response to heat is usually diminished in the involved area as compared with that in the uninvolved area on the opposite side, although it may be normal or even increased. 3. The syndrome is abolished temporarily by procaine block of the auriculotemporal nerve, at the level of the tragus, as shown by several authors, and more lastingly by a resection of this nerve. 4. It is not abolished by a procaine block of the cervical sympathetic chain. 5. Profuse sweating in the area of distribution of the involved auriculotemporal nerve is caused by administering pilocarpine parenterally, and the syndrome is eliminated by atropine. 6. There is marked supersensitivity of sweat glands in the distribution of the affected auriculotemporal nerve to the intradermal injection of acetylcholine."

It is not likely that this syndrome will often be encountered by the dentist. The fact that it is associated with eating may bring it to his attention. A serious diagnostic error would be to confuse this syndrome with a temporomandibular joint disturbance. The treatment for gustatory sweating is intracranial division of the glossopharyngeal nerve.

[1]Gardner, W. James, and McCubbin, James W.: Auriculotemporal Syndrome, JAMA **160**:273 (Jan.) 1956.

THE BACK PRESSURE-

Arm Lift Method

of ARTIFICIAL RESPIRATION

1. *To start the cycle the operator places his hands on the victim's back so that the thumbs just touch and the heels of the hands are just below a line running between the armpits.*
2. *The operator rocks forward slowly, keeping the elbows straight, until his arms are approximately vertical, exerting steady pressure upon the chest.*
3. *The operator then rocks backward, slowly sliding his hands to the victim's arms just above the elbows.*
4. *Continuing to rock backward the operator raises the arms until resistance and tension are felt at the victim's shoulder. He then drops the arms and thus completes a full cycle. The cycles are repeated 12 times per minute, the expansion and compression phases being of equal length, and the release periods of minimum duration.*

DIGEST

Dentists are infrequently required to give artificial respiration. When they must act in such an emergency they should know the latest and most effective method.

Correct positions for the back pressure-arm lift method of artificial respiration, recently adopted by the American National Red Cross upon recommendation of the National Research Council, are illustrated in this article. In this method the victim is placed prone with the elbows bent and with one hand upon the other. The cheek is placed on the hand with the face turned slightly to one side. The operator kneels on one knee at the head of the victim. Each step in the resuscitating process is described.

Position of the Subject

The subject is placed in the manner described in the standard technique for artificial respiration:

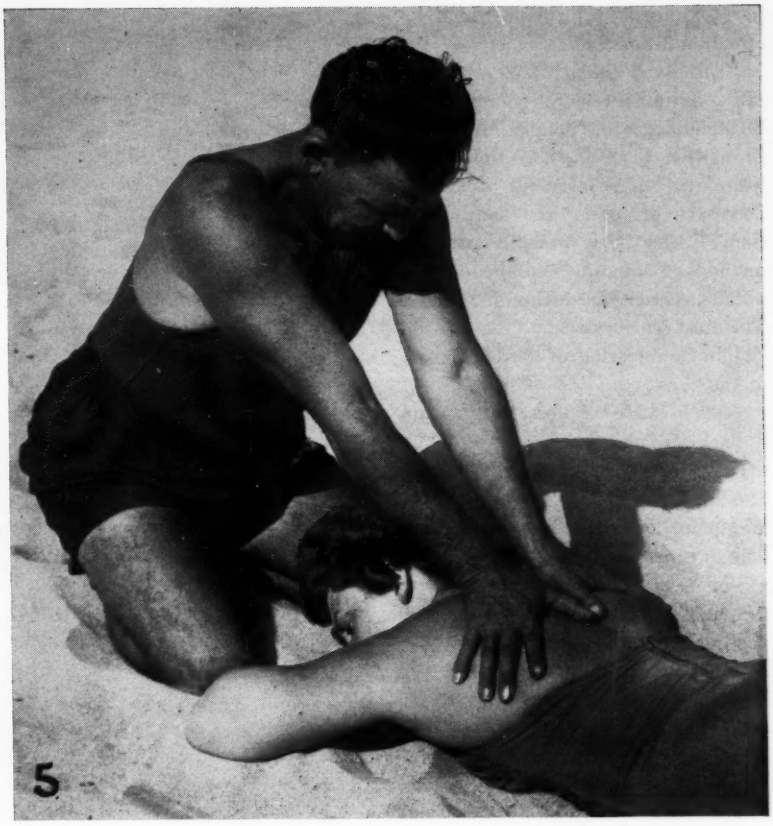
1. The hands are placed one upon the other.

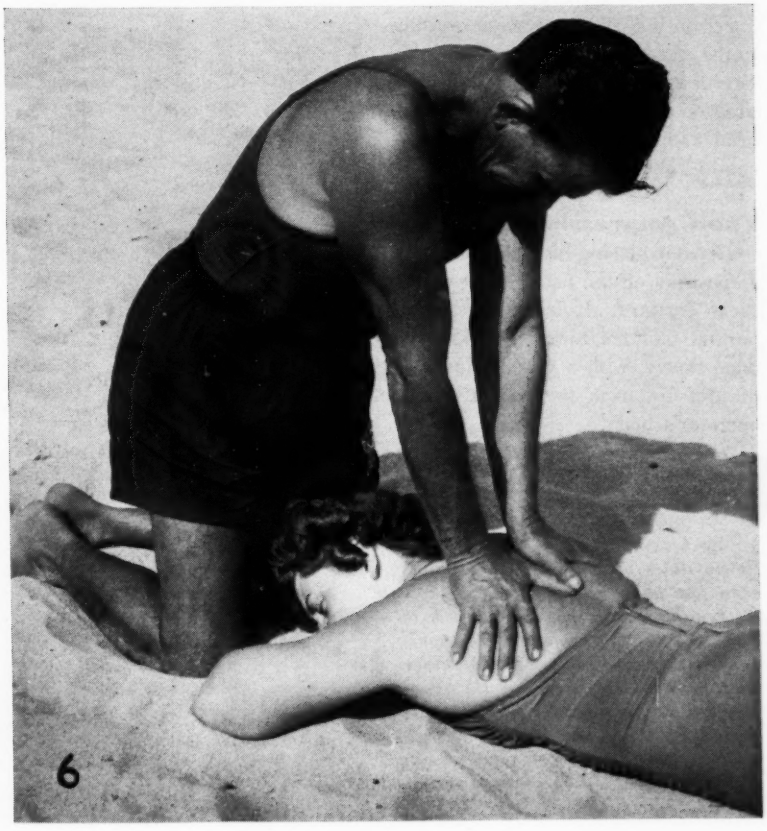
2. The head should be placed upon the hands in such a way that the nose is not obstructed and the mouth is near ground level so that drainage is not impeded.

3. The neck should not flex forward lest obstruction to the respiratory passage occur.

4. The proper position is generally gained if the upper part of the subject's cheek (not the lower part) is placed on the hands, and if the head is turned slightly.

5. Be sure that the mouth is close to the floor, preferably within an inch from it. The lower jaw should not sag; the mouth should be closed. Under actual rescue conditions, the upper end of the body should be at a slightly lower level than the lower





5. *To start the cycle the operator places his hands on the victim's back so that the thumbs just touch and the heels of the hands are just below a line running between the armpits.*

6. *The operator then rocks forward slowly, keeping the elbows straight, until his arms are approximately vertical, exerting steady pressure upon the chest.*

part of the body, provided such inclination is possible.

Ventilation During Carrying Process—Artificial respiration must often be attempted while the victim is being brought to a place where the proper technique can be used. If a carry is necessary preceding the administration of the back pressure-arm lift method, an attempt should be made to obtain ventilation during the carry. The most feasible method may be the simple compression of the lower part of the chest.

To Prevent Relaxation of the Tongue—Backward relaxation of the tongue may obstruct the airway. If the operator quickly inserts his index and middle finger into the subject's mouth, he can press the tongue forward into place. It is likely to remain there if the victim is prone. Attention to the position of the tongue can be given between cycles of artificial respiration, before starting, or by an assistant.

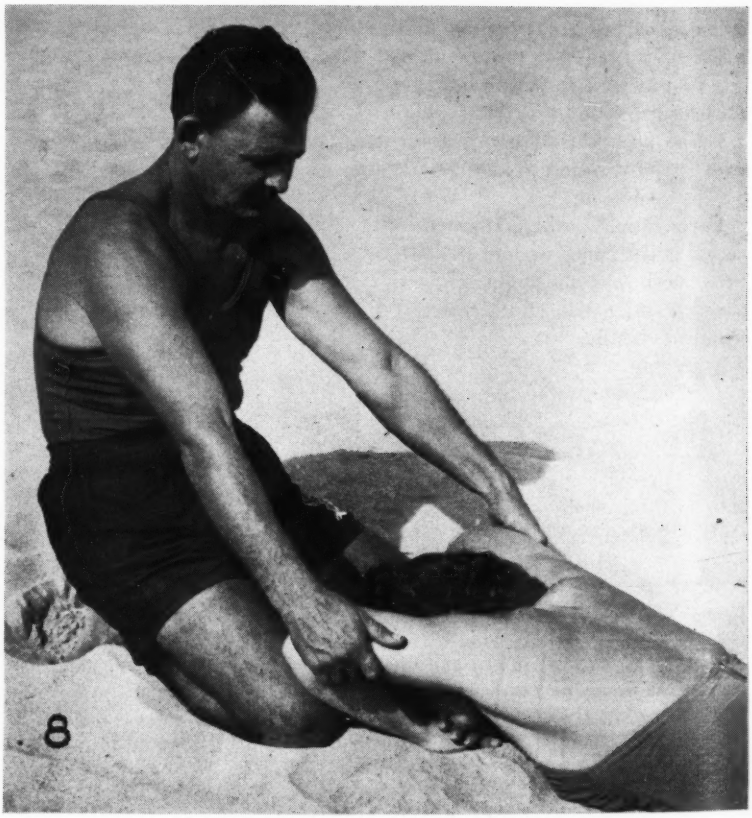
Position of the Operator

The operator may kneel on one or both knees. It is not essential that he kneel on a particular knee according to the direction in which the subject's face is turned. He should adjust his position in relation to the subject's head and shoulders according to his comfort and effectiveness.

The Compression Phase

1. After placing his hands in proper position on the back, the operator rocks forward. It is extremely important that the forward rocking be done slowly, with a gradual increase of pressure from the weight of the operator's body.

2. The degree of forward rocking



7. ***Rocking backward, the operator slowly slides his hands to the victim's arms just above the elbows.***

8. ***Continuing to rock backward he raises the victim's arms until resistance and tension are felt at the shoulder. He then drops the arms and thus completes a full cycle. The cycles are repeated 12 times per minute, the expansion and compression phases being of equal length, and the release periods of minimum duration.***

should be adjusted to the weight of the operator and the age, fragility, size, and development of the subject.

3. When both operator and subject are adults of approximately equal weight and development, the operator should rock forward until his upper extremities are approximately vertical.

Student Should Act as Subject—To the practice subject it appears that in the compression phase of the back pressure technique more weight is being exerted upon him than when the prone pressure method was used. *Every student of artificial respiration should act as a subject as well as an operator in order to learn the technique thoroughly.* In practice sessions, lighter pressure when indicated, may be used than in actual asphyxia.

Control of Pressure—If the operator adjusts his weight properly, the practice subject does not have significant discomfort. The technique has been used upon women and children. Even though a mother has been nursing a baby, the back pressure-arm lift method may be used in case of asphyxia. If the subject is a woman or child, is aged or frail, the operator should be careful not to compress too hard in practice.

Expansion Phase

The expansion phase, occupying approximately the same length of time as the compression phase, is probably the more important in its effect upon ventilation:

1. Immediately upon completing the compression phase, the operator grasps the subject's arms. He then rocks his shoulders back and draws the subject's arms *upward* and toward him.

2. Ventilation is markedly increased if the lift is sufficient to take the chest weight largely or completely from the floor. Maximum ventilation in case of actual asphyxia is most important during the first few minutes of artificial respiration, and the operator should be sure at that time to obtain good lifts even though he may decrease the lift later because of fatigue.

Fatigue in Practice Session—In all cases it is wise to be cautious in practice sessions. The operator may secure a good lift while guarding against back and shoulder strain if he places himself close to the subject, maintains extension of his own back, and keeps his elbows straight. Careful matching of operator and subject as to strength and weight is advisable.

Lift and Pressure may be Adjusted—Operators should be instructed to have subjects notify them in case of discomfort in the shoulders or back, and to adjust the lift and pressure accordingly. Practice procedures should not cause discomfort or harm.

Time Length of Full Cycle

The speed of the full cycle should be 12 times per minute. Beginning operators will probably go somewhat slower. If there is a deviation from the 12, as there probably will be at times even in the most experienced, the deviation should be in the direction of a slightly slower speed than 12 times per minute.

Teaching Directions—A helpful teaching device is the following direction: Press slowly—release—lift slowly—release.

Principal Points in Technique—The student should learn the following points:

1. When the procedure is indicated.
2. Procedure must be started quickly.
3. Determine early that the tongue is not relaxed backward and to remove obstruction in the airway, if possible, in the rare cases where foreign objects are present.
4. To compress *slowly* and significantly, but without excess pressure, especially if the subject is young, aged, or frail.
5. To execute the expansion phase *slowly* and with definite lift.

Adapted from Supplementary Information for Class Use in Teaching Artificial Respiration, the *American National Red Cross, Washington, D.C.*

When Are Space Maintainers Indicated?

Major Comment

It should be remembered that space maintenance is the best preventive orthodontics.

The older techniques for space maintainers were too complicated. Employ the new, simple techniques.

Actually, the new pulpotomy techniques render using primary teeth fit for retention. Hence, they are excellent space maintainers.

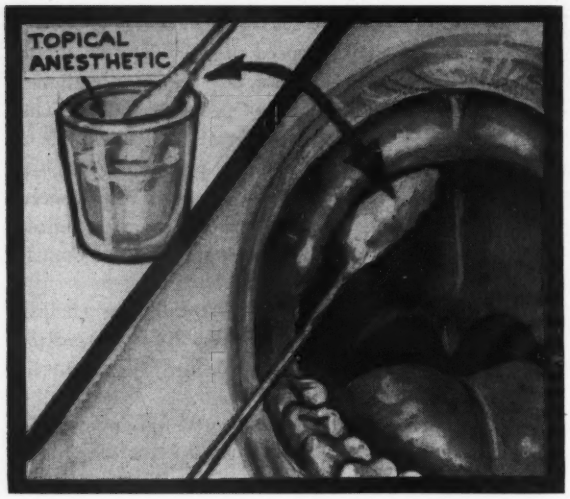
In good recall risks, it is good to measure and record the spaces left by prematurely lost primary teeth.

It is not as important to retain the space left by an extracted first primary molar as that left by a second primary molar.

If mandibular primary cuspids are lost prematurely due to anterior crowding, a fixed lingual arch is a good retainer. Its important function is to keep the molars from moving mesially.

Anterior space maintainers are not necessary, especially across the midline. Use small dentures to replace lost anterior teeth for esthetics.

Adapted from Editorial, A Panel scussion of Orthodontics, *American Journal of Orthodontics* **40**:385-386 (May) 1954.



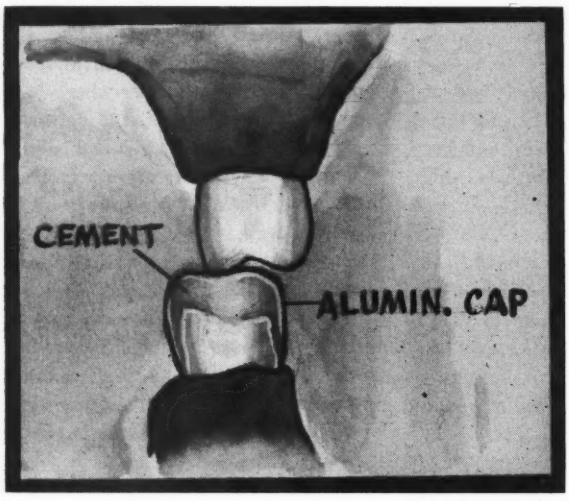
1

Clinical and Laborator

Relining Dentures

George W. Baylis, D.D.S., Jackson, Michigan

1. To prevent irritation of the tissues when using a cold-cure acrylic to reline a denture, paint the mucous membrane with a topical anesthetic solution before seating the denture.



2

Treatment of Extensive Caries in Deciduous Teeth

Estelle M. Natelson, D.D.S., Brooklyn, New York

2. In cases of multiple caries in a deciduous tooth, remove all the caries. Fit and festoon an aluminum shell. Fill the aluminum shell with cement and have the patient bite on it to force it to position.

3

Drying Root Canals

Herbert E. Rashkind, D.D.S., Flushing, New York

3. To dry a root canal connect a needle to a saliva ejector or surgical aspirator. Hold in position for a few seconds.

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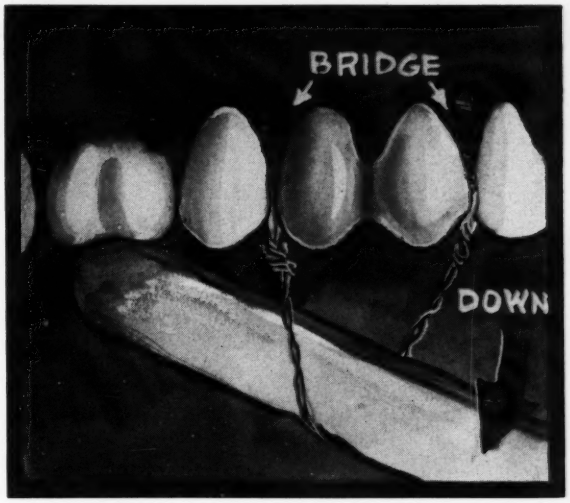
Removing a Fixed Bridge

Solomon Silver, D.D.S., Bronx, New York

4. Insert a double strand of 6-inch length of a 22-gauge brass orthodontic wire at the distal and mesial embrasures. Braid the wires, then twist the distal and mesial braided wires over an 8-inch length of wood bite block. Apply leverage with the wood, using a tooth mesial or distal to the bridge as a fulcrum.

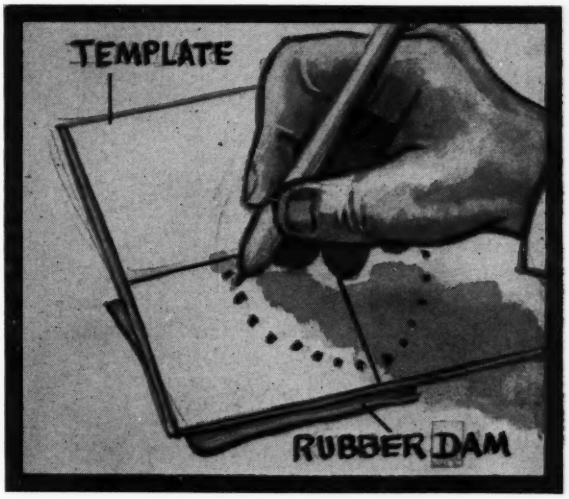


4

Premarked Section of Rubber Dam

Robert J. Goetz, B.S., D.D.S., Southgate, Kentucky

5. Prepare a template of stiff cardboard that is perforated to show the central axis of each tooth. Place the section of rubber dam on the template and mark the spots with ink. Use the rubber dam punch on each ink spot.



5

Holding Cotton Rolls in Position

Charles E. Branson, D.D.S., Lincoln, Nebraska

6. Place the cut-up cotton rolls in a covered jar that contains a small amount of plaster of paris. Shake well. Plaster of paris is hydroscopic, dissolves mucus, and will be found effective in stabilizing cotton rolls.

6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 322 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

Biliary Surgery for Aged Patients

When surgery for disease of the biliary tract is done as an elective procedure, age is not an important factor. Too frequently there is a tendency to defer or reject surgical intervention for the geriatric patient on the basis of age alone. Apparently this conservatism is unwarranted and in some instances may be harmful. The mortality rate of the procedure should never exceed 2 per cent when the patient is carefully evaluated and prepared for surgery.

By performing elective cholecystostomy in an aged patient with degenerative disease processes, it is usually possible to prevent an emergency operation later. In most instances, an elective cholecystectomy is done several months after the cholecystostomy. Prophylactic cholecystectomy for younger patients with calculus cholecystitis is also recommended.

Surgery in older patients with acute cholecystitis demands meticulous management. Operation should be done as early as possible in order to avoid perforation, stone obstruction and jaundice. The incidence of associated biliary tract neoplasia and of choledolithiasis with larger and numerous calculi is increased among geriatric patients.

In one series of 362 patients over 65 years of age with biliary disease necessitating surgery the following conditions were noted: (1) 225 patients had chronic cholecystitis, (2) 92 had acute cholecystitis, (3) 11 had postoperative strictures and other benign strictures of the cholecdochus, (4) 29 had cancer of the gallbladder, and (5) 5 had carcinoma of the extrahepatic biliary ducts.

The over-all operative mortality among patients over 65 years of age with acute cholecystitis was about 11 per cent. In a control group of patients between 50 and 64 years, the mortality was 2 per cent. With chronic cholecystitis, the death rate was more than 4 per cent in patients over 65 and less than 3 per cent in the group of control patients.

MEDICINE *and the Biologic Sciences*

The over-all operative mortality rate of patients over 65 years of age was 6.7 per cent. The most common causes of death, in order of frequency, were (1) hepatic insufficiency, (2) acute coronary occlusion, (3) acute pulmonary emboli, (4) peritonitis, and (5) renal insufficiency.

Glenn, Frank, and Hays, Daniel M.: The Age Factor in the Mortality Rate of Patients Undergoing Surgery of the Biliary Tract, Surg. Gynec. and Obstet. **100**:11-18 (*January*) 1955.

Skin Testing

Skin tests should not be done routinely without first obtaining a history and physical examination if for no other reason than to determine what allergens to use in making the tests. Skin tests are of diagnostic value only if interpreted in the light of clinical findings.

It is recognized that the commonly accepted allergies are definite clinical entities. The initial diagnosis rests entirely on a clinical basis. Once the clinical diagnosis is established a search for the cause should be made.

The history of the patient's ailment is the first and one of the most important steps in determining causal factors of allergy. This has a direct and significant bearing on the interpretation of skin tests and other findings. The form of therapy to be instituted may be indicated from the history which also may show whether a positive skin or mucous membrane reaction to an allergen plays a role in the cause of the syndrome. A history will show that a patient can be sensitive to a given substance despite the fact that the skin and/or mucous membrane test reactions may be negative. A history may also serve as a guide or clue to a patient's tolerance.

There are several hundred allergens available for testing purposes. It is impossible to test every patient with all allergens. Some allergens are of sufficient importance to warrant routine use. These are best determined according to locale and type of patient under study. They usually number under 100.

A routine set of solutions is used basically. Each extract is standardized to a concentration so that its use confirms maximum safety. When a local reaction to a routine extract is negative, solutions of increasing strength may be used.

Allergens in solution as compared to dry allergens, no matter how well prepared and properly refrigerated, deteriorate rapidly. The weaker the solution the more rapid the deterioration.

Skin tests should be performed with single tests and not with group extracts. Clearest results are obtained on the skin of the back. However, the flexor surfaces of the forearms for the scratch test and the lateral surfaces of the skin on the arms for the intradermal test have proved satisfactory, convenient, and practical. These sites are most commonly used. As a routine procedure and from the standpoint of safety, the scratch test, especially in children, is the method of choice and is the one with which the study is started.

A positive skin reaction to an allergen reveals a person with allergies (positive reactor), who may or may not have active, clinical, allergic symp-

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CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 318 *and* 319)

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Evanston, Illinois

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Subject: _____

Explanation of Procedure:

Sketch:

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toms. A person with a negative reaction with active clinical symptoms from the corresponding allergen is called a "negative reactor." Sensitizations are usually multiple and are more frequently encountered in children than in adults. Food sensitization with any method is discovered more satisfactorily in children than in adults. Often the offending food has to be determined by test diet when the skin tests are negative.

The size or intensity of a positive reaction does not determine the degree of general (systemic) sensitivity present. All forms of testing are best regarded as furnishing confirmatory rather than final evidence to fix the responsibility.

Peshkin, M. Murray: Pitfalls of the Skin Test in Allergy, JAMA **157**: 820-823 (*March* 5) 1955.

Tuberculosis Treatment

Chemotherapy suppresses bacterial proliferation and modifies biologic properties of some tubercle bacilli. Organisms may remain virulent, however, after years of treatment, or the disease may progress and cause death even though sputum studies show the strains are attenuated. Therapy is, therefore, effective only when surviving organisms are confined.

Chemotherapy is most valuable for early suppression of infection. Prompt treatment of pulmonary tuberculosis may resolve the initial exudative and pneumonic process.

When adequate therapy is delayed, as when a mistaken diagnosis of pneumonococcal pneumonia is made, extensive tissue necrosis occurs rapidly, within a few weeks or months when the disease is acute. Destroyed tissue is never restored but can only be replaced by fibrous organization. Caseation spreads the disease by liquefaction and sloughing. The lesion may ulcerate into the blood stream or infectious pus may be discharged into the bronchial tree.

Drug therapy is advisable for all patients with tuberculosis with the exception of those with apparently stable and healed lesions. The agents gen-

erally employed are streptomycin, isoniazid, and para-aminosalicylic acid.

Resistant strains develop within two to twelve weeks when a single drug is administered. Two or more drugs are, therefore, used simultaneously. Resistance may be delayed but cannot be prevented, so at least 1 drug, perhaps streptomycin or isoniazid, should be withheld for later use should an exacerbation occur.

The prognosis is favorable when miliary tuberculosis is diagnosed early in the course of the disease. Prognosis of the myriad tiny lesions is arrested and most of the foci are converted to fibrous tissue.

With acute bacterial disease, extensive tissue destruction prevents cure. Chemotherapy, however, provides palliation with abatement of fever, decrease in sputum and euphoria, and on many occasions prolongs life.

The recovery rate for early pulmonary tuberculosis should be almost 100 per cent. For refractory cases, surgery is added to bed rest and drug therapy. The patient should not resume full activity for one to two years. Treatment should be continued until signs of local healing give reasonable assurance that future exacerbations will not occur. After symptomatic control, the residual lesions should be evaluated. A cavity left in the lung causes chronic disability and, eventually, death. A partly healed, solid, necrotic focus almost encapsulated by fibrous tissue becomes a refuge for living tubercle bacilli. At any time, the necrotic focus can liquefy and slough so that organisms initiate a relapse.

Chemotherapy may be continued when large cavities or caseous lesions are noted, but the foci should probably be eliminated by surgery if tubercle bacilli are detected by culture of sputum or gastric contents after a year. Lesions are removed by lobectomy or segmental pulmonary resection. Thoracoplasty and artificial pneumothorax are ineffectual against solid caseous foci.

If residual lesions are extensive and widely distributed, surgery is not feasible. Ultimate cure is impossible and progressive pulmonary fibrosis often compromises respiratory and cardiac function.

Amberson, J. Burns: Current Methods in the Treatment of Tuberculosis, Bull. New York Acad. M. **31**:20-35 (*January*) 1955.

Cataract

Cataract is any opacity of the lens of the eye. It occurs to some degree in almost everyone. Whether a cataract causes a disturbance in vision depends on the size, position, and density of the opacity.

Most gross opacities can be demonstrated by examining the pupillary reflex with ophthalmoscope or flashlight. Evaluation of the crystalline lens requires a pupillary diameter of at least 6 millimeters. When glaucoma is suspected, dilation of the pupil should be done only by an ophthalmologist.

When a flashlight is used to examine the pupillary reflex, the light is directed onto the cornea and the patient is instructed to look up, down, right, and left. A corneal opacity appears as a grayish haze or whitish spot in an otherwise transparent cornea. Lens opacities appear as grayish-white areas in the grayish-black pupil.

Surgical removal of cataract restores vision in 85 to 90 per cent of patients. Medical treatment is not effective for primary lenticular opacities. With cataract associated with systemic or ocular disease, treatment of the primary disease rarely prevents progression of cataract.

Intracapsular extraction may be employed for cataract, with removal of the entire lens. Every effort is made to open the lens capsule and the patient is not required to wait years for the cataract to become mature. Instead, surgery is performed when vision is no longer adequate. Maturity of the cataract is required for extracapsular extraction, which is used in some patients between the ages of 25 and 40 years.

If immature cataracts occur in one or both eyes and binocular visual acuity is sufficient for the patient's

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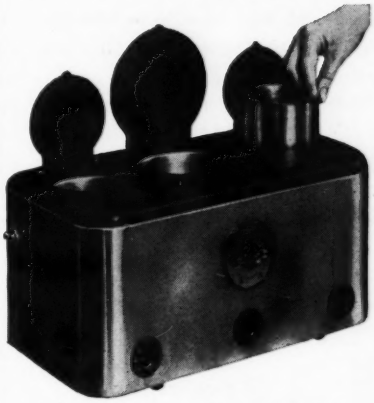

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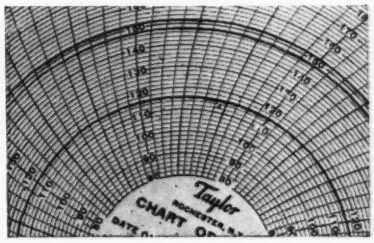

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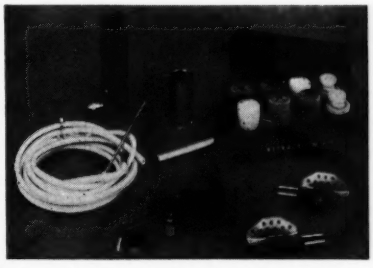

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purposes, surgery is not done. Mature or hypermature cataracts require operation to ensure survival of the eye.

Surgery is not done if tests indicate that cataract extraction will not improve vision. In spite of cataract, the patient should be able to perceive and accurately locate a point source of light and also be able to identify colored light. The pupil should respond normally to light.

Cataract surgery is not done if a patient's general physical condition is poor or if his life expectancy is limited.

Caccamise, William Charles: Cataract: Essentials for the Non-Ophthalmologist, Postgrad. M. **17**:38-42 (*January*) 1955.

Pernicious Anemia

The basic defect in pernicious anemia is a lack of the intrinsic factor in gastric juice necessary for adequate absorption of vitamin B_{12}. Disturbances of the gastrointestinal tract, bone marrow, and central system result. There is no regular relationship between the appearance of the alimentary, hematologic, and neurologic manifestations.

Vitamin B_{12} and folic acid, both required by the body, are of different chemical structure. Folic acid deficiency does not occur with pernicious anemia. Yet administration of the vitamin usually produces a complete hematologic remission. Folic acid, however, has no beneficial effects on the neurologic manifestations, which may progress rapidly while the blood remains normal.

Oral preparations containing folic acid and vitamin B_{12} in addition to other vitamins and iron are unsatisfactory in treatment for pernicious anemia, since vitamin B_{12} cannot be absorbed by this route. Folic acid, on the other hand, is readily absorbed and may produce a hematologic remission, thus giving a false sense of security.

If a patient with pernicious anemia has the commonly encountered symptoms of fatigue, weakness, soreness of the tongue, slight gastrointestinal disturbances, and numbness and tingling of the hands and feet, a multivitamin preparation is often prescribed. If the

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mixture contains folic acid, alimentary symptoms subside and the patient often feels much improved. Then, weeks or months later, progressive neurologic disease becomes apparent. This may incapacitate the patient while the blood remains normal.

Since the use of folic acid has become widespread, many patients when first seen have neurologic disease without appreciable anemia, due largely to previous indiscriminate administration of the vitamin. Treatment should never be initiated until an exact diagnosis is made. Dramatic response to vitamin B_{12} is convincing support of the diagnosis of pernicious anemia. The vitamin is administered parenterally at six-week intervals. If relapses occur during adequate treatment, other conditions such as hemorrhage from cancer of the stomach should be suspected. Multiple agents such as folic acid and iron should never be combined with vitamin B_{12}.

Confirmation of the diagnosis in a patient already receiving vitamin B_{12} is difficult. Achlorydria is not sufficient proof. Therapy should be terminated only if the patient can be carefully observed for relapse for several years.

The syndrome of subacute combined degeneration of the spinal cord should always be considered to be pernicious anemia, even though the blood and marrow are normal. Although treatment with vitamin B_{12} may not reverse neurologic signs, further progression can be arrested.

Conley, C. Lockard: Pitfalls in the Diagnosis of Pernicious Anemia, General Practitioner **11**:59-61 (*January*) 1955.

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There are hazards that confront us when we begin to use nuclear energy to power vessels, trains, planes, and automobiles; when we use atomic power in agriculture and industry. Peacetime use of the atom has been pictured as a beautiful day in the future when this form of power will free man from toil and allow him more time to expand his leisure. Such a kind of "emancipation" may bring his biologic destruction.

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Congress on the Peaceful Uses of Atomic Energy was held in Geneva, Switzerland under the auspices of the UN General Assembly. More than 1200 delegates from 72 nations were in attendance. The proceedings of this Conference were ably reported in the October 1955 issue of *Scientific American*.

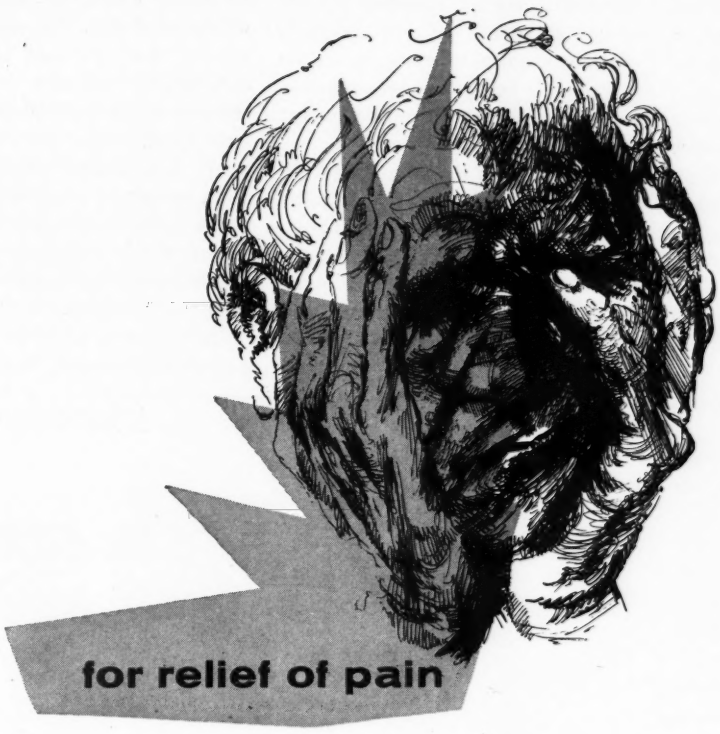
Among the reports was one by C. A. Mawson, Ph.D. of Atomic Energy of Canada, Ltd. These are some of his words on the biology of radioactivity:

"So much has been written on the effects of radiation that it is unnecessary to elaborate on the theme that excessive exposure can cause burns, nausea, falling of hair, anemia, leukemia, sterility, genetic mutations and cancer. It is not so generally recognized that man has lived in a radioactive environment throughout his history and has evolved successfully under bombardment by nearly all kinds of radiation. This was strikingly shown by a large cloud chamber in the U.S. exhibit. The chamber gave onlookers an idea of the swarm of ionizing particles that continually fills the air around us as background radiation. No radioactive material was put into the box, yet at any instant about 500 tracks could be seen. They were due to cosmic radiation and to alpha particles produced by the natural radon in the air.

"We are normally exposed not only to cosmic radiation but also to radiations emitted by potassium 42 and carbon 14, which occur naturally as a small proportion of the potassium and carbon we take into our bodies. From birth we also accumulate small but detectable amounts of uranium, radium and thorium in our bones. The total radioactivity in the body of an average adult is equivalent to about five to nine thousandths of a microgram of radium . . .

"Damage to living cells from radiation is rarely visible under the microscope. But it can be seen after very large doses of irradiation are applied to one-celled organisms such as yeasts or bacteria. M. N. Meissel of the U.S.S.R. described a series of experiments, mainly with yeasts, which showed profound changes in the organisms' metabolic systems, particularly those concerned with nucleic acids, carbohydrates, fats and sterols. He showed a magnificent film in color which depicted the morphological changes in the cells. The pictures were made by phase contrast, luminescent and ultraviolet microscopy. It was fascinating to watch how irradiation frustrated the cells' attempts to divide and made them grow into long, threadlike forms with giant nuclei . . .

"Aside from direct damage to bodily organs, irradiation has harmful indirect effects; among other things, it reduces the body's resistance to infection. I. A. Pigalayev of the U.S.S.R. reported experimental evidence that it causes a decline in the amount of antibodies against bacteria in the body. Such indirect effects introduce an additional factor into the calculation of permissible exposure levels . . . (*Continued on page* 328)



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"For the general population the chief hazard may be the radioactive wastes from atomic power plants. So far the wastes from the large reactors at Hanford in the U.S. and Harwell in England have been disposed of without hazard; there has been no dangerous accumulation of radioactive material in the wildlife or plants in the vicinity of those installations. But investigators pointed out a number of potential dangers in the future. Fish in contaminated rivers, eating organisms which have concentrated radioactive phosphorus, may become unsafe for food. Cattle grazing on pastures near atomic power plants may concentrate radioactive iodine and secrete it in substantial amounts in their milk."

From a Canadian paper, *The Ensign*, of Montreal, a French nuclear physicist, Charles-Noel Martin gives this version of "Radioactivity and the Future of Man:"

"The human race is witness to a nonsensical contest between nations stockpiling innumerable nuclear weapons and it appears just about certain that Einstein's prediction in 1949 has already been realized. The present stock of radioactive bombs controlled by Americans, Britons, and Russians and which must eventually be disposed of, is sufficient to so pollute the earth's atmosphere as to render human life impossible.

"Percentage-wise the amount of pollution under which human life can exist is not very high. The question arises as to whether the actual atmospheric pollution, as low as it may be, is not a threat to our well-being. We are being led to believe that some dissension on this point exists between scientists and specialists. The fact is that no such dissension exists.

"Medical men on the one hand when approached on the subject tend to lead the conversation on to other discussion. Biologists and genealogists on the other hand are most emphatic in stating that any increase in radioactive content of the atmosphere, no matter how slight, is injurious to human life and will have its effects felt by future generations.

"Even though I be a medical man, I have always insisted that these facts be made known to the public. The aim of such publicity is not to bring about panic but rather to foster a clearer understanding of the situation while eliminating disinterest. The old adage 'an ounce of prevention is worth a pound of cure' might well no longer apply because it may soon even be too late to effect a cure. Better that these things be known now."

It may be that the atomic age will fulfill the predictions of economists who have said that the average family income will be $25,000 a year and the work week will be but a few hours. We may have leisure, fast travel, and many luxuries. We may also be biologically destroyed. —E. J. R.

Herpes Simplex

(*Continued from page* 302)

invariably umbilicate, appear over a wide area of skin. The general appearance of these patients, with the accompanying toxemia, suggests an acute exanthem; not all, however, are severely ill.

(7) Encephalitis may develop as a direct result of virus dissemination, but in addition primary herpetic infection of the central nervous system presenting as an aseptic meningitis has been described.

(8) An even more severe type of infection has recently been recognized

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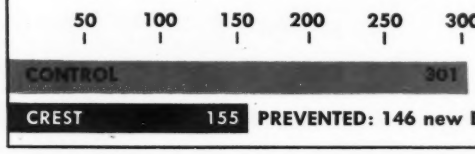
New Decayed, Missing or Filled surfaces per 100 children



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in the form of a fulminating neonatal infection. Several of the infants affected were premature, and visceral necrosis was a marked feature at necropsy.

Therapy

At present no chemotherapeutic agent has any specific action against the virus of herpes simplex, but owing to the early and in many cases gross secondary infection, particularly in the generalized form, it is advisable to use chemotherapy to control secondary invaders. The choice will depend on the organisms and their sensitivity. In certain instances when infants, known to be susceptible, are exposed to infection or likely to be so, temporary passive immunization with gamma globulin should be considered.

Adapted from *British Medical Journal No.* **4884**:403-404 (August 14) 1954.

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Select crown a size smaller than prepared tooth; cut gingivally to tooth height, fill with temporary cement and seat on tooth. Crown adapts to contour as it is being seated.

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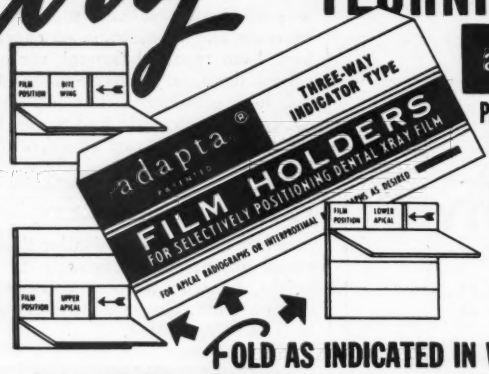

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6. The number of rotating instruments required to perform a cavity preparation is decreased, and a systematic procedure or approach can be established for the various cavity preparations.
7. Makes proper care and maintenance of equipment and instruments a necessity.
8. A coolant must be used.

Advantages of Using a Coolant

1. Eliminates heat.
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   b. No pulp damage due to heat.
   c. Continuous operating possible.
2. Keeps cavity cleaned out.
3. Prevents clogging of rotating instruments and subsequent loss of efficiency.
4. Acts as a lubricant.
5. Cushions vibration to a minor degree.

6. Life of burs and stones is increased because cleaning operations, which tend to dull, are unnecessary.

7. Removal of old restorations is facilitated.

8. Less anesthesia necessary—pulp is protected from thermal trauma with or without anesthetic.

9. Psychological.

a. Patient cooperation is encouraged.

b. Distracts attention from operative procedure.

Disadvantages of Using Increased Speeds

1. The dentist must spend time practicing and familiarizing himself with the various techniques.

2. The dentist must learn to work with a coolant.

a. The spattering of the mirror constitutes a problem which is partly overcome by cleaning the mirror with a detergent thus assuring a completely clean surface.

b. More work must be done by direct vision.

c. The extra attachment and hose connection on the contra-angle or handpiece are annoying to some dentists until they become accustomed to them.

3. The technique requires the purchase of some new equipment.

4. A rigid schedule of maintenance and care of the equipment must be adhered to.

Adapted from *Journal of Southern California Dental Association* **24**:30 (May) 1956.

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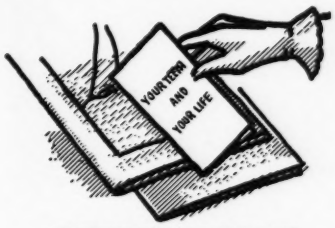

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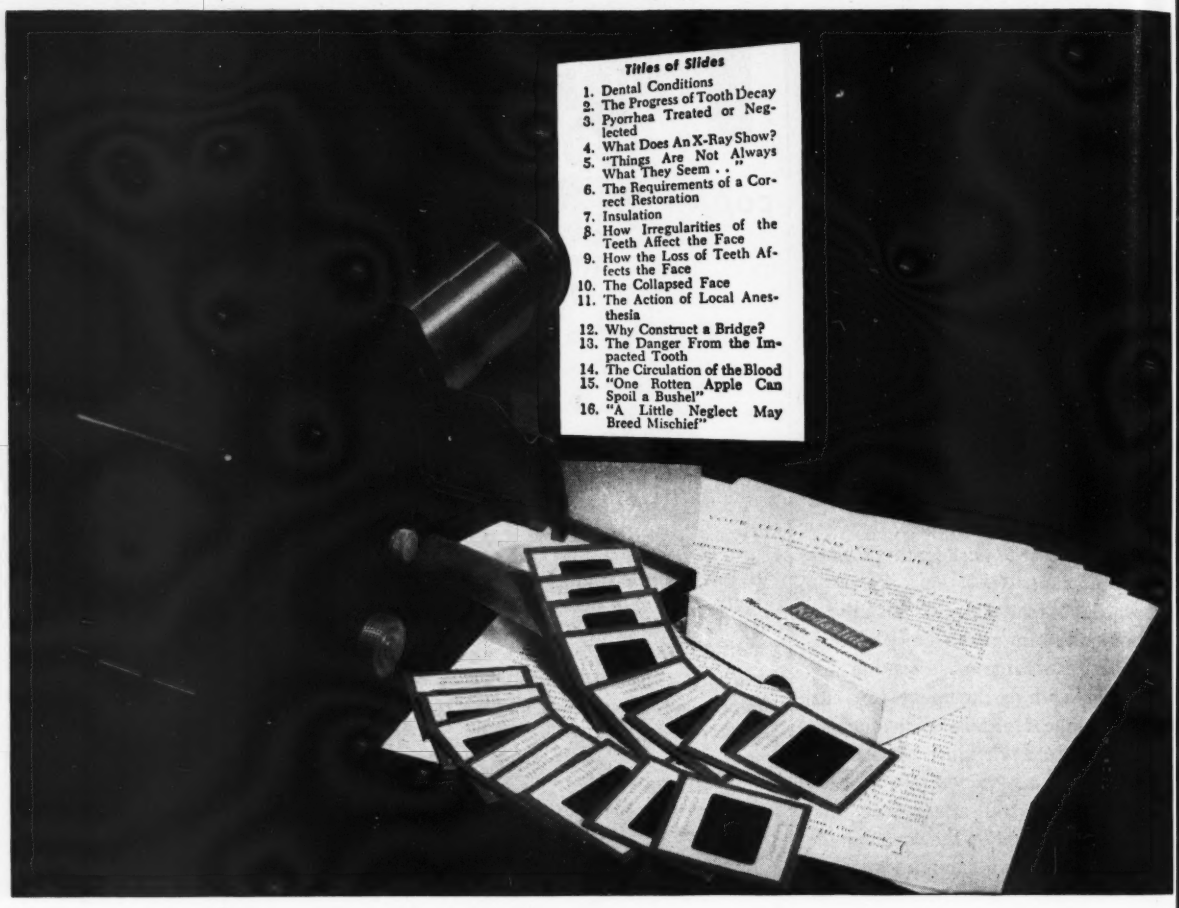
Dental Caries: The Biophysical Factor

THE SHARP reduction of caries in children of northern Europe during and after the war years and the rapid disintegration of the almost perfect teeth of primitive people if they change from their "natural" foods to a "refined" diet suggests that heredity is overemphasized.

Primitive People and Carbohydrates in Diet—Indians in the highlands of Mexico may derive over 70 per cent of their caloric intake from corn, ground or unground, yet they have admirable dentitions, with hardly any caries. As many primitive people with good teeth live on high carbohydrate diets, often including simple sugars, the crucial question is "What accounts for the different effects on the teeth of natural and refined foods?"

Biophysical Factor—From investigation among many isolated tribes with excellent teeth, the protective effect of a "natural" diet is ascribed to a biophysical factor, comparable to disuse atrophy: leave the thigh of a child without the pressure of supporting the body, by keeping the child in bed, and the structure of the femur will undergo a rapid change. The low loads of refined soft diets alter, it is believed, the molecular structure of the teeth and render them susceptible to the attacking agents in the mouth. Inanimate substances and biologic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tissues share their sensivity to pulsating pressures, and in both submicroscopic structures and diffusion speeds are modified.

Chewing Hard Substances Advised—Rather than trying to avoid almost unavoidable bacteria and carbohydrates in the mouth, it is recommended that children be encouraged to chew hard substances, such as the toughest available bread crusts, harder types of cereals as shredded wheat or toasted corn, or the hardest gums available. If available, the toasted haba beans, which are widely used by Indians of the Cordillera may be given. In linking the caries tendency to a load lag, that is, to dental disuse, there is hope for improvement by developing some palatable materials that, in addition to a soft diet, would supply the needed compression stress to the teeth of children.

Adapted from Queries and Minor Notes. *Journal of the American Medical Association* **161**:119 (May 5) 1956.

Pattern of Heart Disease Mortality

THE PAST generation has witnessed radical changes in the relative prevalence of the various types of heart disease. The point is well illustrated by clinical statistics collected in New England in 1925 and in 1950 by Paul D. White.[1] The figures show that the proportion of cases of heart disease due to rheumatic fever has been cut in half during this quarter century—from approximately two-fifths to one-fifth of the total. At the same time, the proportion from coronary heart disease has more than doubled—from approximately one-fifth of the total to more than two-fifths. Relatively, the incidence of hypertensive heart disease has declined slightly, while the proportion of cases of syphilitic heart disease dropped to less than one-fourth what it was 25 years ago.

Factors Involved

These changes in the heart disease picture reflect the interaction of a number of factors. Better control of rheumatic heart disease has been achieved, in part, through the use of antibiotics in the prevention and treatment of streptococcal infections, which play so important a role in the onset or recurrence of rheumatic fever. The antibiotics also deserve some of the credit for the decline in mortality from syphilitic heart disease, but the maximum value of this therapy is only beginning to be reaped. The rise in coronary heart disease reflects, in large part, the increasing proportion of older persons in the population. Other factors, however, are also involved, not all of which are fully understood. Intensive research is being conducted along many lines—clinical, pathologic, nutritional, and social—to unravel these factors, and to find means to halt and reverse the rising toll of premature mortality from coronary disease in our country.

Adapted from *Statistical Bulletin*, Metropolitan Life Insurance Company **35**:3-4 (May) 1954.

[1]Changes in the Relative Prevalence of Various Types of Heart Disease in New England, JAMA, (May 23) 1953, p. 303.

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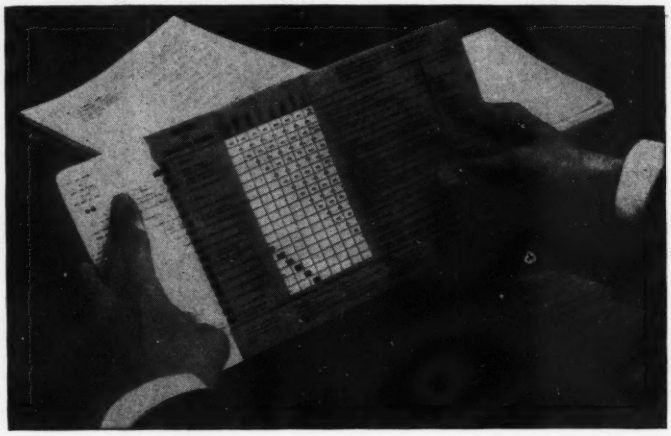

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See page 323 D.D.7

WESTWOOD DENTAL MFG. CO.
2019 PONTIUS AVE., LOS ANGELES, CALIF.

Please tell me more about your products.

Dr. .....

Address .....

City .....

Dealer .....

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YOUNG DENTAL MFG. CO.
ST. LOUIS 8, MO.

Please send free BS Polisher.

Dr. .....

Address .....

City .....

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THE S.S. WHITE DENTAL MFG. CO.
PHILADELPHIA 5, PA.

Please send information on S. S. White Impression Materials.

Dr. .....

Address .....

City .....

See page 326 D.D.7

MEDIDENTA DENTAL SUPPLY CO.
1420 SIXTH AVE. AT 58TH ST.
NEW YORK 19, N.Y.

Please send one Hypo-Sterl at $2 price.

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